DRAIN-GUARD™ DOUBLE CONTAINMENT

Submittal Data Sheet

Job or Customer: .....

Engineer: .....

Contractor: .....

Submitted by: ..... Date

Approved by: ..... Date

Order No: ..... Date

Specification: .....

COMPANION PRODUCTS

Centra-Guard™
Double Containment Leak Detection System

Pipe Carrier Material	Pipe Containment Material
PVC White Sch 40 ☐	PVC White Sch 40 ☐ PVC Clear Sch 40 ☐

Fitting Carrier Material	Fitting Containment Material
PVC White Sch 40 ☐	PVC White Sch 40 ☐

Carrier Size		Containment Size	
1/2"	☐ x	4"	☐
2"	☐ x	4"	☐
3"	☐ x	6"	☐
4"	☐ x	8"	☐
6"	☐ x	10"	☐
8"	☐ x	12"	☐
10"	☐ x	16"	☐
12"	☐ x	16"	☐

Drain-Guard™ enables improved safety and reliability in Drain, Waste and Vent (DWV) applications. Drain-Guard provides the secure environment necessary for piping in vital areas of a wide variety of buildings, including hospitals, museums, historical sites, libraries, art galleries, theaters, data centers, restaurants, and arenas.

Our Centra-lok™ patented design allows IPEX to offer vinyl systems which average up to 60% fewer overall joints and up to 10% fewer field joints. Since joints are always the most common source of premature failures and leaks, it is easy to realize the immense impact the Centra-lok design has on maintenance, repair and installation costs. The ingenuity and simplicity of the Centra-lok design also reduces the purchase cost of IPEX systems.

As with all our containment systems, the IPEX patented Centra-Guard™ point-of-collection or cable leak detection systems are also available.

Pipe and Fitting Availability

PIPE

The DWV system is available in any combination of Vinyl by Vinyl and comes in a size range of 1-1/2" x 4" to 12" x 16" (Carrier x Containment) in Schedule 40.

FITTINGS

- Tee
- 90° Elbow
- 45° Elbow
- 22-1/2° Elbow
- 1/4 Bend
- 1/8 Bend
- 1/16 Bend
- Sanitary Tee
- Wye
- Wye with 1/8 bend
- P Trap
- Reducer / Increaser
- Cleanout
- Floor Drain

Standard fitting offering shown above.
Other fittings are available upon request. Contact factory.

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INSTALLATION PROCEDURES

PVC

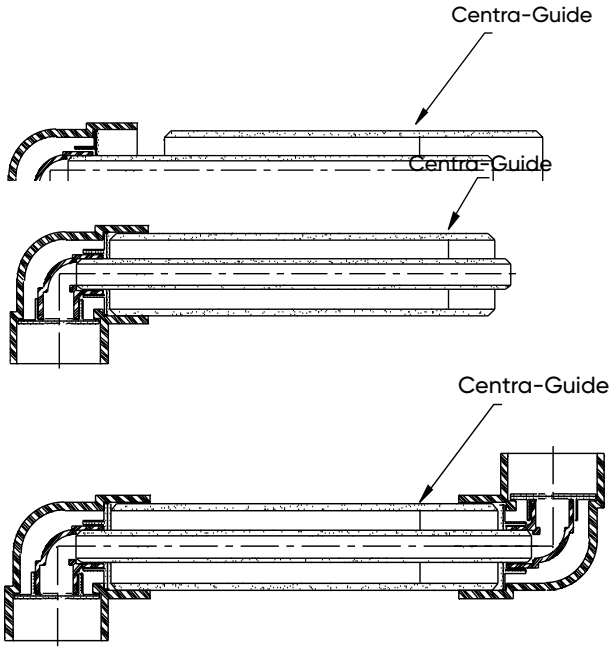
1. Square cut pipe using a saw and miter box or plastic tube cutter. Remove all burrs from both the inside and outside edge of the pipe with a knife, file or reamer bevel all ends. Remove dirt, grease and moisture. A thorough wipe with a clean, dry rag is usually sufficient. Check dry fit. Pipe should insert easily into socket, approximately 1/4 to 3/4 of the total socket depth.

2. Using a suitable applicator, apply an approved primer to the socket of the fitting. (Care should be taken not to allow primer to puddle in fitting socket.) Next, apply primer to pipe surface equal to the depth of the fitting socket. Apply primer again to fitting socket. (Primer is used to soften the surfaces of pipe and fitting, making them suitable for solvent cementing.) Continue to next step immediately.

3. With the same type of applicator, apply a full, even coat of an approved solvent cement to the pipe equal to the depth of the fitting socket. Coat the fitting socket with a medium layer of cement. (Care should be taken not to allow cement to puddle in fitting socket). Apply a second, full, even layer to the pipe. Cement must be applied
in sufficient quantities to fill the joint.

4. Without delay assemble while cement is still wet. Use sufficient force to ensure that pipe bottoms in socket. If possible, twist the pipe or fitting 1/8 to 1/4 turn as assembled.

   Hold together for about thirty seconds to make sure joint does not separate. With a rag, wipe off excess cement. Avoid disturbing the joint.



Simultaneous Solvent Cementing

1. Determine proper carrier and containment pipe lengths to achieve desired center-to-center dimension. Cut to size and prep ends.

2. Prime and solvent cement carrier pipe to carrier fitting socket.

3. Prime and solvent cement containment pipe to containment socket.

4. Install Centra-guide support at pipe's end. Distance between the fitting and support should not exceed 5 feet. Install additional supports if required.

5. Dry-fit fitting to pipe end to ensure proper fit and alignment. Mark containment pipe to ensure full insertion during simultaneous solvent cementing.

6. Apply primer and solvent cement to carrier and containment hubs and pipe ends. Position fitting onto pipe ends, making sure fitting bottoms out completely.

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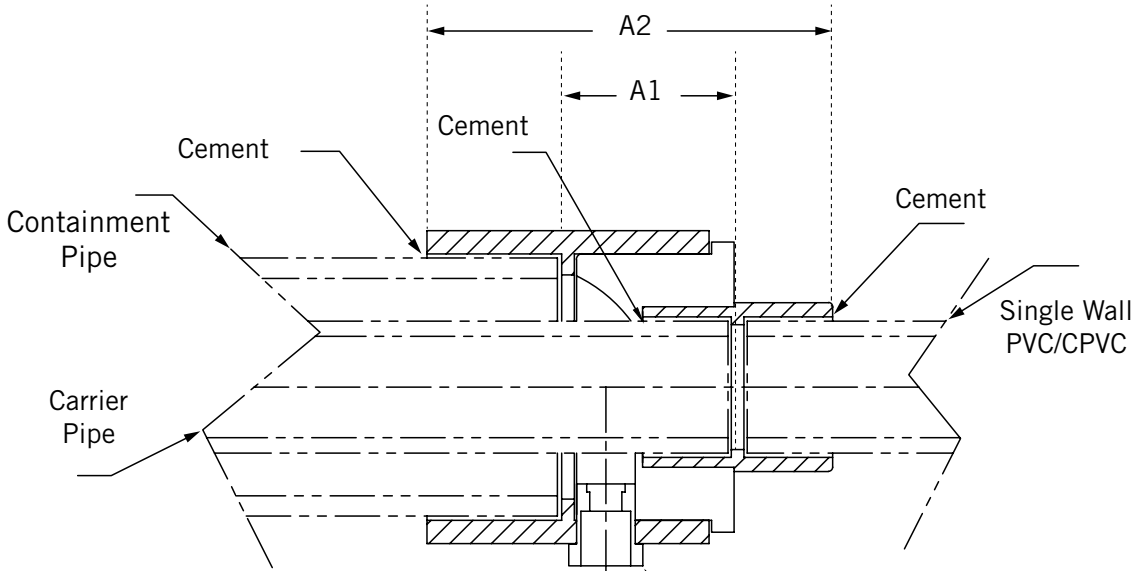
Drain-Guard Termination Fittings

PVC termination fittings are supplied as one-piece. Always bevel carrier pipe and containment pipe end. Prime both the containment pipe and socket of termination fitting. Apply cement to both containment pipe and termination socket and slide into position, rotating 1/8 to 1/4 turn. Allow 24 hours cure time prior to testing. The fitting can be ordered with taps to allow for venting, draining, etc.



Site Pressure Testing

The purpose of a site pressure test is to establish that all joints have been correctly made.

Primary Pipe

Hydrostatic (water filled) testing of the primary joint can be performed after the final primary joint has been completed, set, and cured. The pressure testing procedure detailed below should be strictly followed.

1. Fully inspect the installed piping for evidence of mechanical abuse and suspect joints.
2. Split the system into convenient test sections, not exceeding 1,000 ft. The piping should be capped off with an expandable plug at the end of the pipe section to be tested.
3. Slowly fill the pipe section with cold water, taking care to evaluate all trapped air in the process. Use air release valves in any high spots in the system. Do not pressurize at this stage.
4. Leave the pipe for at least one hour to allow an equilibrium temperature to be achieved.
5. Visually check the system for leaks. If clear, check for, and remove any, remaining air from the system.
6. Pressurize the system to a suggested maximum of 10 feet head by means of a standard 10 foot standing water test using a 10 foot vertical riser, or a low-pressure hand pump.
7. Leave the line at 10 feet head for a period of up to eight hours, during which time the water level should not change (standing water test), nor should the pressure gauge reading change (hand pump test).
8. If there is a significant drop in pressure, or extended times are required to achieve the desired pressure, either joint leakage has occurred or air is still entrapped in the line. In this event, inspect for joint leaks. If none are found, check for entrapped air – this must be removed prior to continuing the test.
9. If joints are found to be leaking, the system must be fully drained and the joints cut out and replaced.
10. Repeat the 10 feet head test after any leaking joints have been replaced, following the procedure described above.

Secondary Pipe - Hydrostatic Testing

1. After successfully completing the primary pipe 10 foot head test, the secondary pipe can be joined and tested. Do not drain the primary pipe. Simply leave the primary pipe at a 10 foot-head hydrostatic pressure.
2. Fill the secondary pipe with cold water and repeat steps 4 to 10 in 'Primary Pipe' procedure.
3. After successfully completing the secondary pipe test, leave the primary pipe full of water and under pressure. Drain the secondary pipe and purge through with low pressure, dry (-100F dewpoint), air or nitrogen to purge out all moisture from the system.

TESTING

Secondary Pipe - Air Testing

1. An alternative to hydrostatically testing the secondary pipe exists. This alternative testing uses dry, low pressure air, subject to the engineer and/or authority having jurisdiction.

2. Leave the primary pipe at a 10-foot head hydrostatic pressure to avoid any possibility of the primary pipe collapsing due to external load from the secondary pipe test.

3. Fill secondary pipe with air to a maximum of 5 psi for 1 hour.

   NOTE: For more information on lower pressure air testing of thermoplastic piping systems, reference Unibell B6.

4. **While taking great care not to impact or damage the secondary pipe**, the exposed secondary joints should be wiped with an **IPEX approved leak detector liquid solution**. In addition, check the pressure gauge to make sure that there is no pressure decay. It is essential that the system is closely monitored and that the pipe suffers no impact or other damage during the test.

   NOTE: If the secondary system is tested using air, IPEX recommends using the Drain-Guard test cap. This test cap is designed to be used with the system. It comes complete with air valve, quick disconnect, gage and regulator valve. These test caps are available in all secondary pipe sizes. Contact our Customer Service Department to order.

⚠ WARNING

It is imperative that a working-pressure regulator be used during the pneumatic test to ensure that over-pressurization of the PVC, beyond 5 psi, cannot occur. The following must also be noted: Air or nitrogen under pressure is compressed and therefore poses a potential hazard. If a failure of the pipe or fitting occurs during such test, the air exits at the failure point and expands rapidly.

This increase in velocity can cause the system to fail in a catastrophic mode. Therefore during such air test all personnel involved in the test or present in the test surrounding area must be aware of such a possibility and take all necessary precautions. Precautions include, but are not limited to, taking extreme care not to impact or damage the system in any way. Such procedure is a limited exception to IPEX standard policy which forbids the use of its rigid systems with any compressed gases, unless the product(s) is specifically designed for the conveyance of compressed gases.

Conduct this test only when the ambient temperature is 50°F or above.

The secondary pipe should never be pressurized to any more than 5 psi when using air.

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MATERIALS AND SPECIFICATIONS

PVC Double Containment Piping System

GENERAL

Scope of Work

Furnish all labor, materials, equipment and incidentals required to install a Guardian PVC (Primary) / PVC (Secondary) double containment piping, valves and appurtenances for complete systems as shown on the drawings and as specified herein.

Description of Systems

Sanitary DWV or
_____% Chemical Names (To be inserted)

Submittals

Shop drawings shall be submitted to the engineer and include details of pipe fabrications (including supporting devices, method of attachment, spacing, etc.), prefabricated double containment fitting dimensions, starting and terminating connections, high-point vent and low-point drain details for the secondary containment, valves and accessories. Submit joint details, methods and location of supports, and all other pertinent technical data for all piping to be furnished.

Qualifications

The double containment piping system shall be a Guardian prefabricated system as manufactured by IPEX. The system shall be fabricated, installed and tested in accordance with IPEX's recommendations and as specified herein and shall be suitable for the intended service. Contractors shall have installation training by manufactuer or qualifed representative prior to installation. Manufacturer shall have a minimum of five (5) years experience. Contractor shall not design and/or fabricate the piping system.

PRODUCTS

General

Each contained piping system shall consist of Drain-Guard PVC primary piping system supported within a Drain-Guard PVC secondary containment housing. Carrier fittings will use Centra-Lok supports minimizing the number of field fitting joints. Each system shall be provided with suitable drains and vents and be designed to provide complete drainage of both the primary and secondary containment piping. Interstitial supporting devices shall be made from Centra-Guide supports and shall be provided within the secondary containment pipe, and shall be designed to allow continuous drainage in the annular space to the drain points. Drain-Guard fittings shall be designed to allow a valve attachment to be made so that the secondary containment piping can be readily drained and manually checked for leaks.

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Materials

The primary and secondary pipe and fittings shall be manufactured from Drain-Guard™ Schedule 40 PVC materials as manufactured by IPEX and in accordance with ASTM and ANSI standards.

All listed primary and secondary pipe shall be Drain-Guard DWV Schedule 40 PVC. Pipe shall have Schedule 40 thickness according to ASTM D1785. Drain-Guard Solvent Weld Pipe is certified to ASTM D2665 and CSA B181.2 and complies with the material requirements of ASTM D1784.

All listed molded DWV fittings shall be Drain-Guard Schedule 40 PVC and comply with the material requirements of ASTM D1784. Drain-Guard Solvent Weld Molded Fittings are certified to ASTM D2665 and or CSA B181.2 and complies with the material requirements of ASTM D1784.

All listed fabricated DWV fittings shall be Drain-Guard Schedule 40 PVC. Drain-Guard Solvent Weld Fabricated Fittings are certified to CSA B181.2, and comply with the material requirements of ASTM D1784.

Interstitial supporting devices used to center and support the primary piping within the secondary containment piping shall be manufactured from Centra-Guide supports.

All fittings will be pre-assembled. Carrier fittings will be supported with the Centra-Lok system and pre-tested by the product manufacturer (IPEX).

Standards

ASTM D2665 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings. ASTM D2665 is included in Table 702.1of 2012 edition of IPC (International Plumbing Code). ASTM D2665 is included in Table 701.1 of 2012 edition of the UPC (Uniform Plumbing Code).

CSA B181.2 Polyvinylchloride (PVC) and chlorinated polyvinylchloride (CPVC) drain, waste, and vent pipe and pipe fittings. CSA B181.2 is included in Table 702.1 and Table 702.2 of 2012 edition of IPC.

ASTM D1784 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds, having a cell classification of 12454. ASTM D1784 is included in Section 301.1.2 and 301.2, of 2012 edition of IPC.

ASTM D1785 Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120. ASTM D1785 is included in Table 701.1 of 2012 edition of UPC.

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SPECIFICATIONS

PROPERTIES	PVC PIPE MATERIALS		
	CLEAR	WHITE	Standards
Cell classification	15334	12454	ASTM D1784
Specific gravity	1.32	1.42	ASTM D792
Tensile strength, psi at 73°F	6,100	7,000	ASTM D638
Modulus of elasticity tensile, psi at 73°F	320,000	400,000	ASTM D638
Flexural strength, psi		14,500	ASTM D790
Izod impact, ft.lbs./in. at 73°F, notched	10	0.65	ASTM D256
Compressive strength, psi		9,000	ASTM D695
Poisson's ratio		0.38	
Working stress, psi at 73°F	1,575	2,000	
Coefficient of linear expansion in./in./°F (x 10-5)	3.8	3	ASTM D696
Linear expansion, in./10°F per 100' of pipe	0.46	0.36	
Maximum operating temperature	140°F	140°F	
Deflection temperature under load, °F at 66 psi		173	ASTM D648
Deflection temperature under load, °F at 264 psi	158	168	ASTM D648
Thermal conductivity, BTU.in./hr.ft2.°F		1.2	ASTM C177
Burning rate		Self extinguish	ASTM D635
Burning class		V-0	UL-94
Limited oxygen index (%)		43	ASTM D2863-70
Water absorption, %, (24 hrs. at 73°F)		0.05	ASTM D570

*The properties listed in this table represent general material properties and should be used as a guideline only.

About IPEX

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the world's largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems
- PVC, CPVC, PP, PVDF, PE, ABS, and PEX pipe and fittings

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