Double Containment

piping systems

Engineered protection for the environment

ips

Double containment piping - the safe solution

Increasing emphasis is now placed upon companies and organisations to meet their obligations to the workforce and to the community. Handling corrosive or hazardous sustances poses a threat to employees and to the environment if there is a risk of spills or leaks from pipework.

In conjunction with the many other measures that must be put in place, double containment piping provides a complete system designed so that leaks are safely controlled, detected and an alarm or visible indication given to warn of the problem. Once identified, the leaking system can be safely drained and repaired without the risk of accident or an environmentally damaging spillage.

Why use plastic double containment?

Industrial plastic piping is widely recognised as a superior product when used to handle aggressive, corrosive or hazardous liquids under pressure. The materials used rival metal systems in respect of chemical resistance and cost-effectiveness. Plastic piping is strong, lightweight and easy to install - and it remains effective in use over a long lifetime.

Plastics are also easy to fabricate and assemble using simple techniques such as solvent cement welding or heat fusion welding. Because of this they can be configured into a double containment system without difficulty, and site installation is straightforward, both above or below ground.

Effective control and detection of leaks

Systems are designed and manufactured to have a high structural integrity on both the primary (carrier) pipe and the secondary (containment) pipe. The annular space between the two pipes collects any fluids that have discharged within a pressure-tight cavity. Once this has occurred, an alarm is raised and the leaking system is shut down until it can be drained and repaired or replaced.

Double containment systems can accomodate a number of leak detection methods. One common method is to divide the system into zones that are each fitted with a liquid sensing device (such as a float switch), or a device to detect pH or pressure changes. Simpler still is the incorporation of clear sections into the containment piping or at low (drain) points in the system. Where early alarm is paramount, a detection cable may be passed through the annular space between the carrier and containment pipe. This cable both detects conductive liquids and pinpoints the origin of the leak.

double containment piping systems

Systems to meet all applications

Double containment piping systems can be used in a wide range of industries, handling a broad diversity of chemicals. They can be installed above or below ground, and they can be manufactured from rigid or flexible materials. In all cases they provide a safe, cost-effective solution for handling corrosive and hazardous media.

- **DuoSafe PVC-U** is a rigid PVC-U system for pressure or drainage piping - ideal for use with a wide range of acids, alcohols, salts and halogens.
- **DuoSafe PVC-C** is a rigid PVC-C system, broadly sharing the same characteristics as DuoSafe - except that it can operate at temperatures up to 100°C.
- **DuoSafe FLEX** is a flexible PVC system designed to provide long, unbroken runs of small diameter piping - typically for chemical dosing applications.
- **Poly-Flo** is manufactured from Polypropylene, PVDF or Polyethylene and is ideal for low pressure chemical transfer lines. The unique construction makes this an especially cost-effective product.
- **AgruSafe** systems are manufactured from Polypropylene, PVDF, ECTFE or Polyethylene, and are suited to highly aggressive applications - particularly in large diameters.

You can rely on our expertise

Years of experience and partnerships with some of the world's largest system manufacturers means that you can rely on our know-how to ensure that you select the most appropriate double containment system for your application.

We can work with you on material selection, overall system design, assessing pressure ratings and chemical resistance. We can advise on best value solutions to your problems. We understand the importance of easy field installation, and we can provide free, certified training in plastics welding for all our systems.

Our systems have been successfully installed at major job-sites and by many leading contractors. We have covered a wide range of applications, handling aggressive media in industries such as chemical production, water treatment or semi-conductor manufacturing.

DuoSafe®

DuoSafe systems are manufactured from rigid PVC-U or rigid PVC-C, with containment pipe options including grey or clear PVC-U, PVC-C, ABS or Polyethylene.

They are ideal for above or below ground double containment such as applications found in chemical dosing lines, or to handle a wide range of acids, alcohols, salts and halogens. They are lightweight, rigid and easy to support. DuoSafe PVC-U is suitable for working temperatures up to 60°C. DuoSafe PVC-C may be used at higher temperatures - up to 100°C.

DuoSafe systems are designed for easy installation. Easy access is given to make the first joint on the inner (carrier) pipe, before making the final joint on the outer (containment) pipe. Assembly is faster and joints are more secure. DuoSafe systems are also assembled using a unique solvent cement - Weld-On 724 - which guarantees strong integrity with a wide range of aggressive chemicals.

A second significant benefit is the ease by which pipe cut lengths can be determined using a simple calculation based on the face-to-face measurement between the fittings to be connected. Installation becomes quick and easy.

Several options on pipe pressure ratings are available - up to a maximum 16 bar. For reasons of economy it is usually also possible to reduce the pressure rating of the containment piping without affecting the system integrity.

Systems are available in PVC-U using inch or metric sized piping. It can be specified in the standard dark grey colour, or with a clear PVC-U containment pipe to provide continuous visible monitoring of the system. Additional containment pipe options include ABS, for improved strength on above ground systems, and polyethylene (PE) for below ground applications.

DuoSafe PVC-C is manufactured in inch sizes in light grey with the option of a clear PVC-U containment pipe.

DuoSafe Inch Systems

Containment		PVC-U	PVC-C	PVC-U
	Carrier	PVC-U	PVC-C	PVC-U
Pipe Size	Pipe Size			
2”	1/2”	●	●	●
3”	3/4”	●	●	●
3”	1”	●	●	●
4”	1 1/2”	●	●	●
4”	2”	●	●	●

DuoSafe Metric Systems

Containment		PVC-U	ABS	PE
	Carrier	PVC-U	PVC-U	PVC-U
Pipe Size	Pipe Size			
50mm	20mm	●	●	●
63mm	25mm	●	●	●
75mm	32mm	●	●	●
110mm	50mm	●	●	●
125mm	63mm	●	●	●

Larger sizes on request

DuoSafe® FLEX

DuoSafe FLEX is engineered for applications where long, continuous lengths of small diameter pipe is required. It is ideal for dosing applications such as in water treatment where there may be multiple dosing points drawing from a single chemical storage unit.

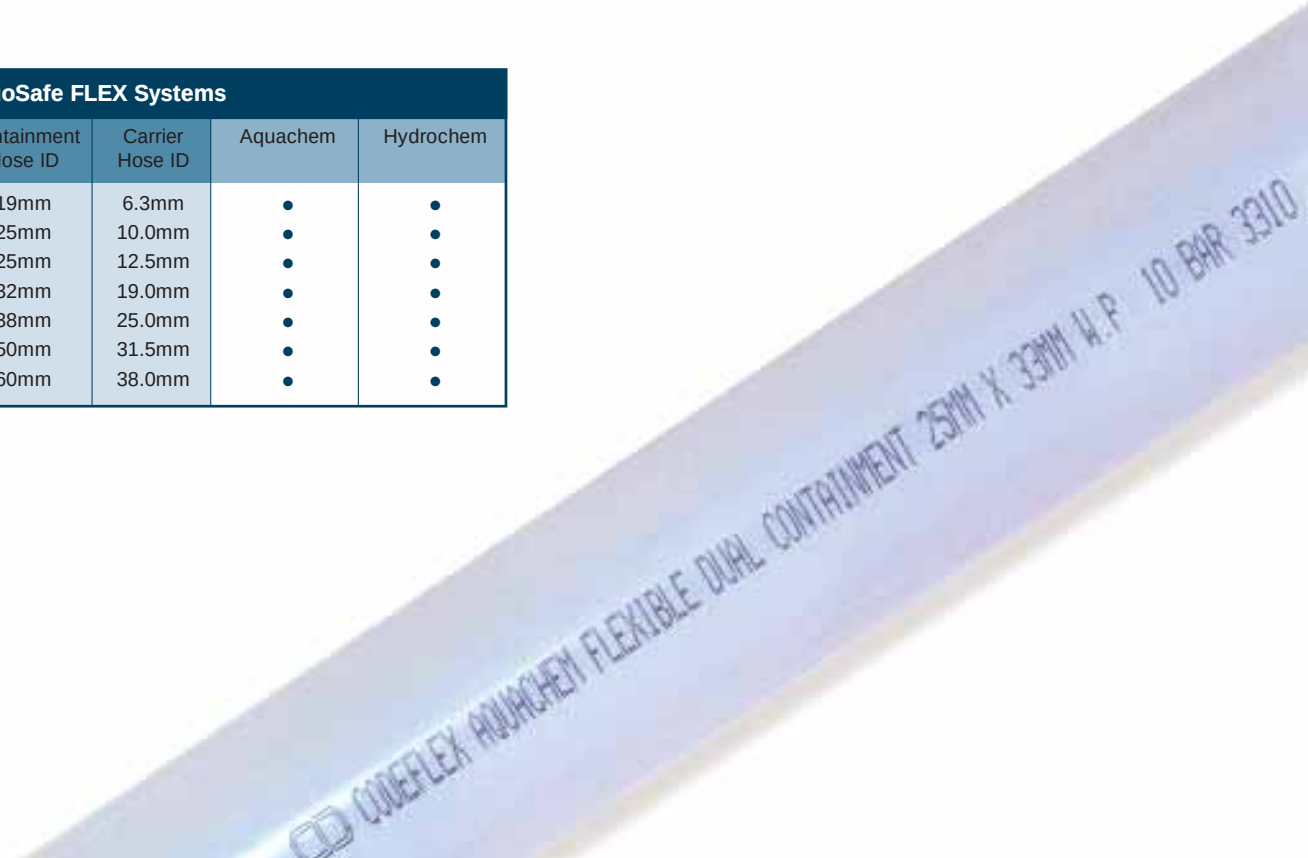
DuoSafe FLEX is developed in conjunction with Copely Developments - one of the pioneers in the development of flexible pipe systems, and the inventors of the first open mesh PVC hose in 1950.

The system uses high quality flexibles that are manufactured as double contained products in a single extrusion process. They are supplied either in standard coil lengths of up to 300 metres, or may be cut to specific shorter lengths or specially manufactured in longer coils should the job require it. Connections between lengths or at termination points are made using a special range of rigid PVC-U fittings.

There are two types of flexible carrier hose available - Aquachem and Hydrochem - each offering strong resistance to a wide range of dosing chemicals. The carrier (dosing) tube is manufactured in sizes from DN 6mm up to DN 38mm, with a maximum working pressure of 10 bar.

DuoSafe FLEX Systems

Containment Hose ID	Carrier Hose ID	Aquachem	Hydrochem
19mm	6.3mm	•	•
25mm	10.0mm	•	•
25mm	12.5mm	•	•
32mm	19.0mm	•	•
38mm	25.0mm	•	•
50mm	31.5mm	•	•
60mm	38.0mm	•	•



Poly-Flo®

The Asahi/America Poly-Flo system is a unique product. Manufactured in a patented process, it uses rigid pipes that are extruded as a twin-wall product together with twin-wall fittings that are injection moulded as a single item.

The first benefit from this process is the minimisation of the space required for the containment pipe. Unlike all other rigid systems - that require the size of the containment to be large enough to pass through the carrier pipe and fittings - the unitary construction allows for a significant overall reduction in size.

Poly-Flo is also extremely easy to cut and weld, making installation relatively inexpensive. The carrier pipe and the containment pipe are butt-fusion welded in a single, simultaneous process that gives reliable joints between pipes and fittings.

The Poly-Flo range also includes a number of fittings that are not available in other double containment systems - most notably flanges to enable systems to be prefabricated or to be disassembled.

Manufactured from black Polypropylene, natural PVDF or black Polyethylene, this system is ideal for applications such as laboratory waste systems or pressurised transfer lines. Typical installations are in waste treatment, carrying sulphuric acid or caustic soda, for bulk storage chemicals such as sodium hydroxide and aluminium nitrate; and in semi-conductor plants, handling sulphuric, nitric, and hydrofluoric acids for wet stations. The black Polypropylene and Polyethylene materials also offer a high level of resistance to UV when installed outdoors.

Poly-Flo is available in carrier pipe sizes 1” (DN25mm), 2” (DN 50mm) and 4” (DN 100mm). The assembled system has a fully pressure rated carrier pipe and containment pipe, suitable for use at working pressures of up to 6 bar.

Poly-Flo®				
Containment		PP	PVDF	PE
	Carrier	PP	PVDF	PE
Pipe Size	Pipe Size			
2”	1”	•	•	•
3”	2”	•	•	•
6”	4”	•		•

Agrusafe

AgruSafe double containment is fabricated from seperate pipes, and is available in Polypropylene, PVDF, Polyethylene and ECTFE (Halar). It is manufactured by AGRU - using the latest production and fabrication techniques to ensure maximum system integrity.

The systems may be assembled using the same carrier and containment materials, or they may also be ordered with dissimilar materials for reasons of economy or perhaps to suit a particular application.

AgruSafe is available with carrier pipe sizes as small as DN 25mm, however it is especially suitable for larger diameter systems. The standard range features carrier pipe diameters in sizes up to DN 250mm, but it is commonly manufactured in larger sizes up to DN 600mm. It is ideal for industrial and process waste lines as well as for pressurised transfer piping. Typical applications are found in pharmaceutical and semi-conductor plants, steel mills, plating shops, or in the chemical and nuclear industries.

There are two separate welding techniques used for AgruSafe systems: simultaneous welding and cascade welding.

Simultaneous welding uses the standard butt-fusion welding technique and is used where carrier pipes and containment pipes of the same material are used. The twin walls of the pipes and the fittings are welded together during the assembly process so that they can be clamped as one piece in the butt-fusion welding machine. Welding of the carrier and containment pipe takes place simultaneously.

The cascade welding technique is required when the carrier and containment pipes are from different materials. Cascade welding requires a specially adapted butt-fusion welding machine with a split welding plate so that the carrier pipe can be welded first. Once this is done, the outer shell of the welding plate is moved into position so that the containment pipe can be welded. Welding machines for both systems are available for sale or for hire.

AgruSafe systems are available in a variety of pressure ratings - up to PN16 - to suit the application. Using the wide range of pressure rated pipe and fittings - for example PN 3.2, PN 6 or PN 10 - it is possible to optimise the cost effectiveness of the system.

AgruSafe Simultaneous Welded Systems

Containment		PP	PE	PVDF	ECTFE
	Carrier	PP	PE	PVDF	ECTFE
Pipe Size	Pipe Size				
90mm	32mm	●	●	●	●
110mm	63mm	●	●		
125mm	63mm			●	
160mm	63mm				●
160mm	90mm	●	●	●	●
200mm	110mm	●	●	●	
280mm	160mm	●	●	●	
315mm	200mm	●	●		
355mm	250mm	●	●		

AgruSafe Cascade Welded Systems

Containment		PE	PE	PP	
	Carrier	PP	PVDF	PVDF	
Pipe Size	Pipe Size				
90mm	32mm	●	●	●	
110mm	63mm				
125mm	63mm	●	●	●	
160mm	90mm	●	●	●	
200mm	110mm	●	●	●	
280mm	160mm	●	●	●	

Larger sizes on request

ips

freephone
0800 975 79 71

International Plastic Systems Ltd
Seaham Grange Industrial Estate
Seaham Co Durham SR7 0PT
England

Tel: 0191 521 3111
Fax: 0191 521 3222

E-Mail: sales@ips-plastics.com
Website: www.ips-plastics.com

International Tel: +44+ 191 521 3111
International Fax: +44+ 191 521 3222

European Plastics Distributors Association

INTERNATIONAL ASSOCIATION OF PLASTICS DISTRIBUTORS

INVESTOR IN PEOPLE