

CONTAIN-IT Plus

For your double protection

Double containment system
for industrial applications



The system

One solution protects you twice

The reliable, corrosion-resistant double containment system for highly diverse industrial applications protects your environment.

We are dedicated to designing, manufacturing and marketing products insuring greatest possible safety for your employees, whenever environmentally hazardous media need to be conveyed. Customers rely on our 30+ years experience in double containment, our state-of-the-art production technology and our global presence with a worldwide service and training offering. GF Piping Systems introduced the CONTAIN-IT Plus plastic piping system, which offers increased safety to eliminate the accident risk and takes account of the more and more restrictive legal requirements. In this way we can optimize environmental protection in this area. CONTAIN-IT Plus warrants a maximum protection, reliability and performance. It is the ideal and future-oriented choice to minimize personal and environmental risks for any challenging application on the industrial field.



All you need from one source

CONTAIN-IT Plus is ideally adapted to your needs.

We offer more than reliable and innovative products to our customers. We also supply tailor-made solutions from one source. With a comprehensive system solution, GF Piping Systems provides the right fit and quality for many industrial applications and projects worldwide. The variety of pipes, fittings, valves as well as jointing technologies in the CONTAIN-IT Plus portfolio is as diverse as our customers and their individual challenges.

+ Individuality - from the planning stage



Pipes



Fittings



Valves

Chemical resistance

Our Specialists offer individual support and advice in selecting the right material for the corresponding requirements of chemical resistance.

Static of evidence calculation

While planning containment piping systems the material characteristics must be considered in conjunction with work-related and external effects. Such influencing factors can lead to mechanical, thermal and chemical stress. These stresses and consequences must be calculated.



+ Main benefits

Complete system range

- Simple design for fast and easy assembly
- Available in a number of plastics (PP, PE, PVDF, PVC-U, PVC-C)
- Includes range of valves and automation
- Worldwide service: Customizing, machine rental pool, training and sales support

Total plastic solution

- Corrosion-free
- UV and weather resistant
- Good chemical resistance (choice of material)
- Good temperature resistance
- Smooth internal surface
- Low weight and easy handling

Job safety

- Personnel and environment protection
- Suitable for visual inspection and identification
- Adaptable leak detection system
- System lifetime warranty*

to installation



Leak detection



Jointing technology



Customizing and training

Technical documentation

Our extensive know-how is fully documented in detail in our technical manuals, planning fundamentals and application guides.

Training courses and on-site trainings

Offering a wide range of training courses we provide participants an excellent opportunity to gain confidence in working with our products and proven jointing technologies.

Technical support

Technical support such as material selection is a key factor for the successful installation. A team of experts is available for individual support all around the world.

CAD library

The freely available database comprises over 30 000 drawings as well as technical data for our customers. Diverse formats are available.

Online and mobile calculation tools

Our numerous online and mobile calculation tools, available in many different languages, support our customers in configuring and commissioning our products.

Customizing

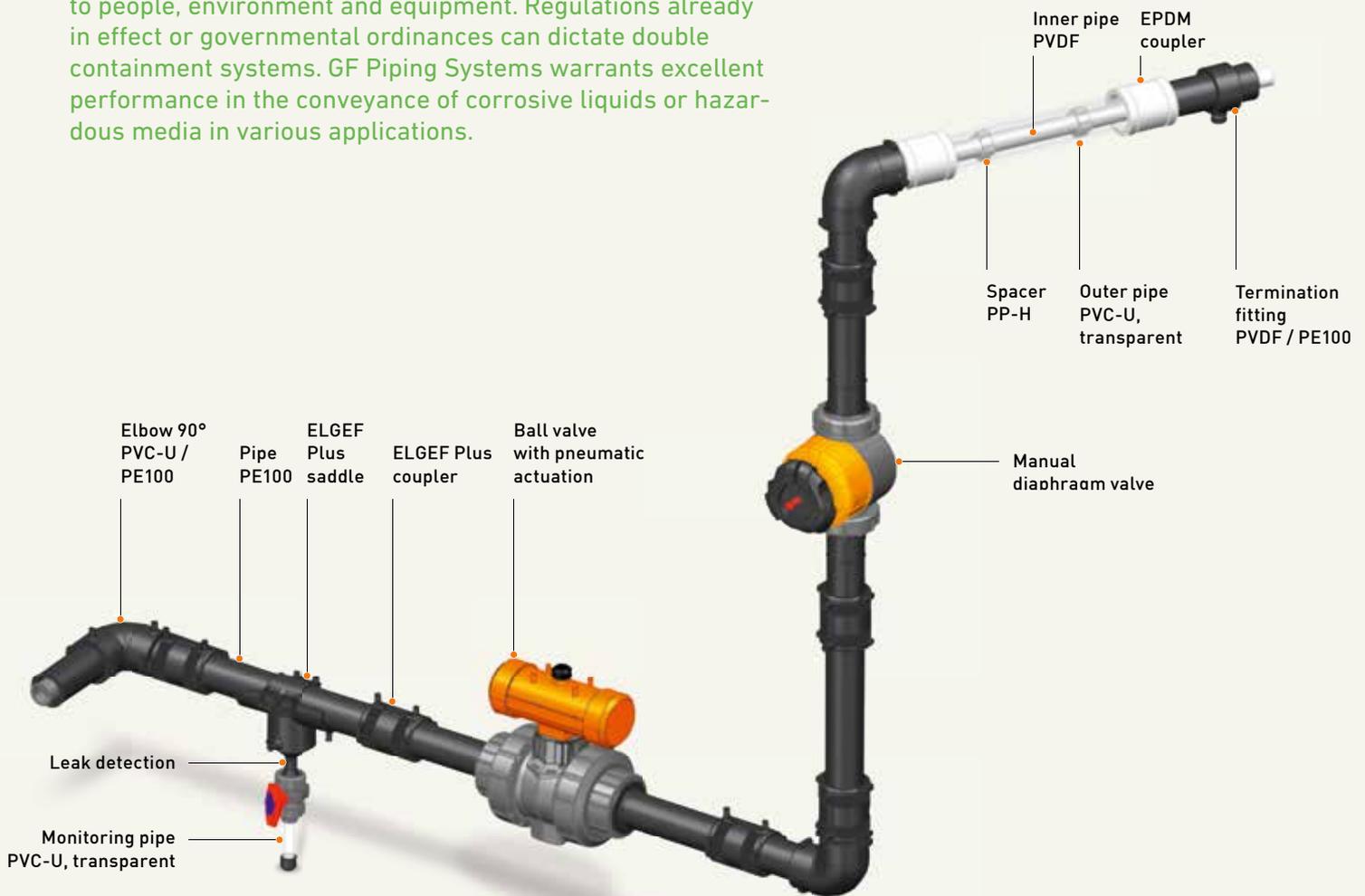
The focus of our worldwide located customizing teams is manufacturing individual parts for special systems. Standardized processes guarantee the highest level of quality.

*Detailed information regarding the warranty can be found under: www.gfps.com - Planning Fundamentals

The technique

For highest demands

CONTAIN-IT Plus piping systems are used to minimize risk to people, environment and equipment. Regulations already in effect or governmental ordinances can dictate double containment systems. GF Piping Systems warrants excellent performance in the conveyance of corrosive liquids or hazardous media in various applications.



+ Innovative double containment solution

Unique jointing method

CONTAIN-IT Plus is based on the principle of the so-called initial jointing of the inner pipe. With this technology, the inner and outer pipes can be installed separately. This permits laying a double containment pipeline analogous to a single pipeline. The DVS guidelines (German Welding Society) which stipulate visual inspection of each joint are observed strictly.

Take "last joint" easy

The so-called "last joint", which occur with every change of direction in other systems and which usually have to be done blind, do not exist with this method. After jointing the inner pipe, there is a 30 mm gap between the ends of the outer pipe. This gap serves to test the inner pipe according to DVS guidelines.

Proven installation quality

After the pressure test is successfully completed for the inner pipe, this gap will be closed with a snap ring. Finally, an ELGEF Plus coupler or a EPDM coupler is placed over the ring and the pipe ends, and then fused or screwed down.

Engineering support

Advanced engineering services

Standard details

GF offers best practice standard details for plastic piping systems. These rely on own GF solutions, tailored for plastics. We provide you with guidelines for easy and safe transition from metal to plastics and detailed recommendations on restraints and thrust blocks based on pipe stress analysis.

Static evidence – straight length

GF calculates for you the static evidence of your piping elements, based on single geometries (straight length). We can also supply a detailed network static calculation.

Static evidence for networks

GF calculates for you the static evidence of your piping network, based on your preliminary drawings, and proposes improvements. Every calculated evidence is verifiable by 3rd parties (PE, TUV...), and our calculations open up to warranty for the complete installation (when using GF products).

Heat loss calculations

Heat losses can impact your process, even more in specific applications such as cooling. To design both your system and your process, you need an accurate heat loss calculation, which is highly linked to the piping network characteristics. This is where GF can support you, relying on decades of experience in plastic piping systems.

Dynamic mechanical stress analysis

Plastics calculations require extensive material know-how to be reliable, which is a strong asset when working with GF. We can perform stress analysis in regards to the piping installation with or without the support system. We also offer you along with this service a warranty statement when using our products to build on our calculation.

Seismic calculations for networks

GF verifies your system compliance to local codes, conducting seismic calculations and verifying the complete piping installation. This includes EN 1998, UBC 1997, ASCE 7, 2010, constant acceleration, acceleration curves...



System range

More than a system

With a constant focus on maximum reliability and safety, the CONTAIN-IT Plus system assures a sustained high level of product quality and outstanding performance in all applications. The clearly defined development and manufacturing processes of our worldwide specified systems are carried out on the basis of all relevant standards and specifications. They are regularly audited and evaluated to achieve continuous improvement. Certified processes as well as product approvals are part of the active and sustainable quality management system of GF Piping Systems and make us a reliable partner. Therefore, with our CONTAIN-IT Plus system range, customers can be assured that their needs are covered and comply with necessary standards.

CONTAIN-IT Plus system range

Material (inner/outer)	Products	PN (inner/outer)	*d _o		d _i															
			20	25	32	40	50	63	75	90	110	125	140	160	180	200	225	280	315	
PP-H / PE100	Socket fusion fittings	10	16																	
		10	10																	
	Butt- / IR-fusion fittings	10	16																	
		10	10																	
		10	6																	
PE100 / PE100	Butt- / IR-fusion fittings	16	16																	
		16	10																	
	Ball valve	16	6																	
		10	6																	
		10	6																	
PE80 / PE100	Socket fusion fittings	16	16																	
		16	10																	
	Ball valve (Body: PVC-U, PP-H)	10	6																	
		10	6																	
		10	6																	
PVDF / PE100	Socket fusion fittings	16	16																	
		16	10																	
	Butt- / IR-fusion fittings	16	16																	
		16	10																	
		10	10																	
PVC-U / PE100	Ball valve	16	6																	
		10	6																	
	Diaphragm valve	16	6																	
		10	6																	
		16	6																	
PVC-C / PE100	Cemented Socket fittings	16	16																	
		16	10																	
	Ball valve	10	10																	
		16	6																	
		10	6																	
Leak detection	Cemented Socket fittings	16	16																	
		16	10																	
	Ball valve	16	6																	
		10	6																	
		16	6																	

*d_o: dimension of the outer pipe
d_i: dimension of the inner pipe

Chemical resistance

For your operational safety

Our special teams offer individual support and advice in selecting the right material of inner pipe for the corresponding requirements.



Professional material technology

Chemical resistance at 20 °C (Applications can be very dependent on the concentration)		Partially crystalline thermoplastics			Amorphous thermoplastics		Stainless Steel		
		PE	PP	PVDF	PVC-U	PVC-C	1.4401 316	1.4301 304	
Oxidizing Acids (HNO ₃ , H ₂ CrO ₄ , H ₂ SO ₄ , etc.)	HNO ₃ ≤ 25 %	o	o	+	+	+	o	o	
	25 % ≤ HNO ₃ ≤ 65 %	o	-	+	o	+	o	o	
	H ₂ CrO ₄ aqueous solution	o	o	+	o	o	o	o	
	H ₂ SO ₄ ≤ 70 %	+	+	+	+	+	-	-	
	70 % ≤ H ₂ SO ₄ ≤ 96 %	-	-	+	+	+	-	-	
Non Oxidizing Acids (HCl, HF, etc.)	HCl ≤ 30 %	+	+	+	+	+	o	-	
	HF ≤ 40 %	+	+	+	+	-	o	-	
	40 % ≤ HF ≤ 75 %	+	+	+	-	-	-	-	
Organic (formic acid, acetic acid, citric acid, etc.)	HCOOH ≤ 25 %	+	+	+	+	+	o	-	
	25 % ≤ HCOOH ≤ tech. pure	+	+	+	+	-	o	-	
	CH ₃ COOH ≤ 50 %	+	+	+	+	+	o	-	
	50 % ≤ CH ₃ COOH ≤ tech. pure	+	+	+	o	-	o	-	
	C ₃ H ₄ OH (COOH) ₃	+	+	+	+	+	o	-	
Bases	Inorganic (NaOH, KOH, etc.)	+	+	-	+	o	+	+	
	Organic (amine, imidazole, etc.)	+	+	-	o	-	o	o	
Salts	NaCl, FeCl ₂ , FeCl ₃ , CaCl ₂ , etc.	+	+	+	+	+	o	o	
Halogens	Chlorine, bromine, iodine, (no fluorine)	-	-	o	o	o	o	-	
Fuels / Oils	Aliphatic hydrocarbons	o	o	+	+	o	+	+	
	Aromatic hydrocarbons	-	-	+	-	-	+	+	
	Chlorinated hydrocarbons	-	-	o	-	-	o	o	
Solvents	Ketones	+	+	o	-	-	+	+	
	Alcohols	+	+	+	o	-	+	+	
	Esters	o	o	o	-	-	+	+	
	Aldehydes	+	+	-	-	-	+	+	
	Phenols	Phenol, Kresol, etc.	+	+	+	-	-	+	-

+ resistant o conditionally resistant, please consult us - not resistant

Please note: The above list is only intended as a guideline and does not replace an in-depth review of material suitability for the particular application. The information is based on our experience and is state of the art. These data are general indicators only. In practice, however, other factors such as concentration, pressure and jointing technology must also be taken into consideration. The technical data are not binding and are not expressly warranted characteristics of the goods.

Please contact us for help in selecting the right materials.

Proven technologies for your installation

Joining technology

Socket fusion – the strong connection

The strong, fast and easy solution to produce heavy-duty connections in the workshop or on field.

Butt fusion – the economical connection

The economical connection, especially for bigger diameters. From manual machines to full CNC control versions including traceability function.

IR- (Infrared) fusion – the fast, clean connection

The fast, repeatable and clean welding via non-contact heating. Full traceability of the welding process with user guideline.

Electrofusion

State-of-the-art semiautomatic technology combined with a low weight make the MSA-Plus machines perfect for onsite fusion.

Solvent Cementing

The simple and reliable joining. No machine is needed, only gap filling Tangit cement and a few simple tools.

Welding machines/tools



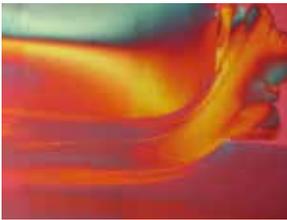
Joint cross-section



Material, application and medium are key criteria for selecting the right jointing technology. A diverse range of innovative and intelligent welding solutions enriched with global training and service offerings insure safe connections.

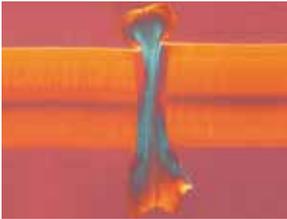
As a pioneer in the field, GF Piping Systems has always been placing a high priority on developing innovative jointing techniques to fulfill specific requirements. Simplicity in application, chemical resistance, thermal stability and long-term weld strength are the key drivers in our jointing technologies. With a global jointing training program, international machine rental and a worldwide network of service centers, our customers benefit from expert know-how and practical experience.

Macro-image



Technical characteristics

The pipe end and socket of the fitting are heated to fusion temperature with contact to a heating bush and a heating spigot.



The fusion areas of the components are heated to fusion temperature with contact to the heating element and joined controlled by pressure.



The fusion areas of the components being heated to fusion temperature without contact to the heating element and joined by controlled distance.



The fusion areas of the pipe and electrofusion fitting overlap and are welded by resistance wires inside the fitting (heating coils) which are heated up by electrical energy.



The solvent cement is applied by a brush on the pipe end and in the socket of the fitting. After softening the surfaces, the pipe is pushed into the socket.



Reference case

Application Know-how

Sewage treatment plant in Neckarsulm

Treating wastewater in municipal sewage plants involves a chemical precipitation process to remove phosphates from the wastewater. In this process at the sewage plant in Neckarsulm, treatment capacity 200,000 PA, iron (III) chloride and sodium aluminate are used as precipitating agents. The precipitants are metered out and controlled via analyzers in the outlet of the activation tanks. The precipitation reaction therefore takes place on the way to and in the secondary sedimentation basins themselves. The difficult to dissolve metal-phosphorous compounds (iron and aluminum phosphates) are

removed with the surplus sludge from the secondary sedimentation basins and conducted to further process steps.

For this purpose, two new dosing stations with double-walled storage tanks were installed in the Neckarsulm sewage plant. The storage tank filling pipes, the pipelines from the tanks to the dosing station and the pipes to the activation tanks, which are often located underground, were installed with the double containment piping system CONTAIN-IT Plus.



Why double containment?

In hazardous goods designation, iron (III) chloride is categorized as harmful to health and sodium aluminate as caustic. Responsible companies today demand the highest level of safety in their plants, building them according to the requirements of Water Resources Act and Technical Rules for Water. Fluids that leak uncontrollably can harm plant equipment, our environment or people. With the double containment piping system leaks are contained and indicated rapidly and reliably by a leak monitoring device.

Leak detection

Leaks are usually monitored with fluid sensors at the lowest point of the pipeline or in the designated collection tank. The termination fitting, which closes off the monitoring space between the outer and inner pipe is mounted pressure-resistant with a sealing ring, and supports connection with a 1/2" connection thread.

Material and jointing technology

The material PE100 was used for the inner and the outer piping. The PE inner pipe is joined with socket fusion (heating element mandrel) and the containment pipe with electro-socket fusion from our ELGEF Plus program. Both jointing technologies are standard connections made with

conventional fusion machines. The separate jointing of inner and outer pipe allows performing a leak test on the media-conveying pipe prior to closing the outer pipe. The fusion joints can be checked as they are made. The double containment piping system is therefore constructed similarly to a single pipe system.

+ Benefits at a glance

- Instant leak detection
- Legal compliance
- Optimal protection of people, equipment and our environment
- Production safety
- Minimize risk



Sewage treatment plant in Neckarsulm
Germany



Worldwide at home

Our sales companies and representatives ensure local customer support in more than 100 countries.

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