

# PVC systems

# Continuously improving thanks to experience and innovation

## Cemented systems for applications from food through to aggressive chemicals



**Quick and easy project implementation thanks to a reliable and highly flexible system.**



PVC

# Reliability and sustainability guaranteed

The PVC system from GF Piping Systems offers maximum safety and reliability for countless applications, from drinking water to highly aggressive chemicals. The best possible piping components are also available for special requirements.

## Proven in practice

The PVC-U system from GF Piping Systems has proven itself in practice for more than 60 years, and combines a comprehensive assortment of pipes, fittings, valves, actuators, and measurement and control technology with ideal jointing technology. All components come from a single source, meaning they are perfectly matched.

## Lifetime warranty

We prove our confidence in the premium quality of our product by providing a lifetime warranty. The warranty applies to all PVC-U products produced in accordance with DIN/ISO standard 15493 and 1452 with the GF brand. In the event of damage, these products are either immediately repaired or replaced with equivalent products.

\* You can find detailed information on the warranty at: [www.gfps.com](http://www.gfps.com)



## Vinyl Plus® voluntary commitment of the PVC industry

VinylPlus® is the European PVC industry's voluntary commitment to sustainable development, to improve the sustainability performance of PVC. PVC can be recycled many times and VinylPlus does just that. The VinylPlus program was developed in a open dialog with stakeholders from the industry, authorities, NGOs, representatives from civil society, and consumers. The program is active in all 28 member states of the European Union as well as in Norway and Switzerland. The objectives were identified in five areas, based on "The Natural Step – System Conditions for a Sustainable Society":

- Increase the amount of recycled PVC annually to 800,000 tons by 2020
- Promote the sustainable use of additives
- Improve the sustainability of PVC products and their contribution to sustainable development
- Gradually reduce greenhouse gas emissions and energy and resource consumption throughout the entire manufacturing phase
- Move towards a low carbon circular economy
- Create awareness of sustainability along the value chain and among various stakeholders

### PVC – when it counts

With an ignition temperature of 330 to 400 degrees Celsius, PVC is flame retardant. The chlorine content means that the PVC itself does not burn – if the source of ignition is removed, then the fire is extinguished. Any dioxin quantities and other pollutants produced are as low as in a house fire. However, PVC's flame-retardant and self-extinguishing properties reduce the risk of fire even before it occurs. We only use rigid PVC without plasticizers for our durable components. PVC offers many good prospects for sustainable development:

### + Low environmental impact

Low energy consumption and relatively low emissions and waste during production and processing.

### + Sustainable resources

Making use of salt, a practically infinite resource. PVC-U consists of just 43% petroleum components and 57% salt (NaCl).

### + Recyclable material

Basic and raw material reusability means that the carbon footprint is smaller compared to other pipe materials.

PVC

# Safe, easy and efficient to use

**There is a choice of PVC piping systems to meet every requirement, depending on the prerequisites.**

PVC-U shows very good characteristics in the temperature range from 0° to 60°C. Thanks to their good temperature and chemical resistance, PVC-U systems withstand the most demanding conditions, particularly when transporting aggressive media such as acids, alkalis, bases, and salts. The high level of safety, efficiency, and reliability of the universal solution meets all requirements, from construction through to the operational use of industrial piping systems. The consistent fulfillment and exceeding of the requirements defined in international standards is proof of the quality, safety, and reliability.



## PVC-C

The PVC-C system is used for applications above 60°C. The PVC-C system is suitable for water and chemical applications up to a maximum temperature of 80°C. The dimension range is d16 to d225. PVC-C has a higher titanium dioxide content and is thus more resistant to UV.



## Double containment piping system

Double containment piping systems provide exceptional protection for people, the environment, and installations. The inner pipe is cemented and tested, then the outer pipe is closed. Visual and integrated, automated leakage monitoring systems are available.



## Schedule 80

For customers who prefer the American standard, we offer our Schedule 80 products in PVC and CPVC. The systems have conical sockets and are very robust. The products are also very well suited for chemical applications, thanks to the thicker walls.

## PVC application areas



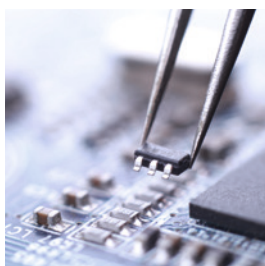
### Water treatment

- Drinking water
- Industrial process water
- Industrial wastewater
- Municipal wastewater



### Marine

- Cruise ships
- Ferries
- Offshore
- Merchant ships



### Micro-electronics

- Semiconductors
- Photovoltaics
- TFT/HB-LED
- Storage media



### Energy

- Conventional power plants
- Renewable energies
- Pioneering alternative energies



### Chemical process industry

- Mineral processing
- Surface treatment, galvanizing, batteries
- Paint and varnishes
- Cosmetics and detergents, textile industry



## Universal and reliable

As a leading PVC piping systems provider with a global presence, we offer our customers not only reliable and innovative products, we also supply tailor-made solutions from a single source. PVC's excellent properties make it the ideal choice for numerous applications in chemical, water, and wastewater treatment, as well as for vacuum lines. Production plants are often operated around the clock. Reliable and safe piping systems that can consistently deliver critical liquid process solutions are therefore an absolute must.

+ **Chemical resistance**

+ **Fast and precise**

+ **Easy to maintain**

+ **Drinking water approval**

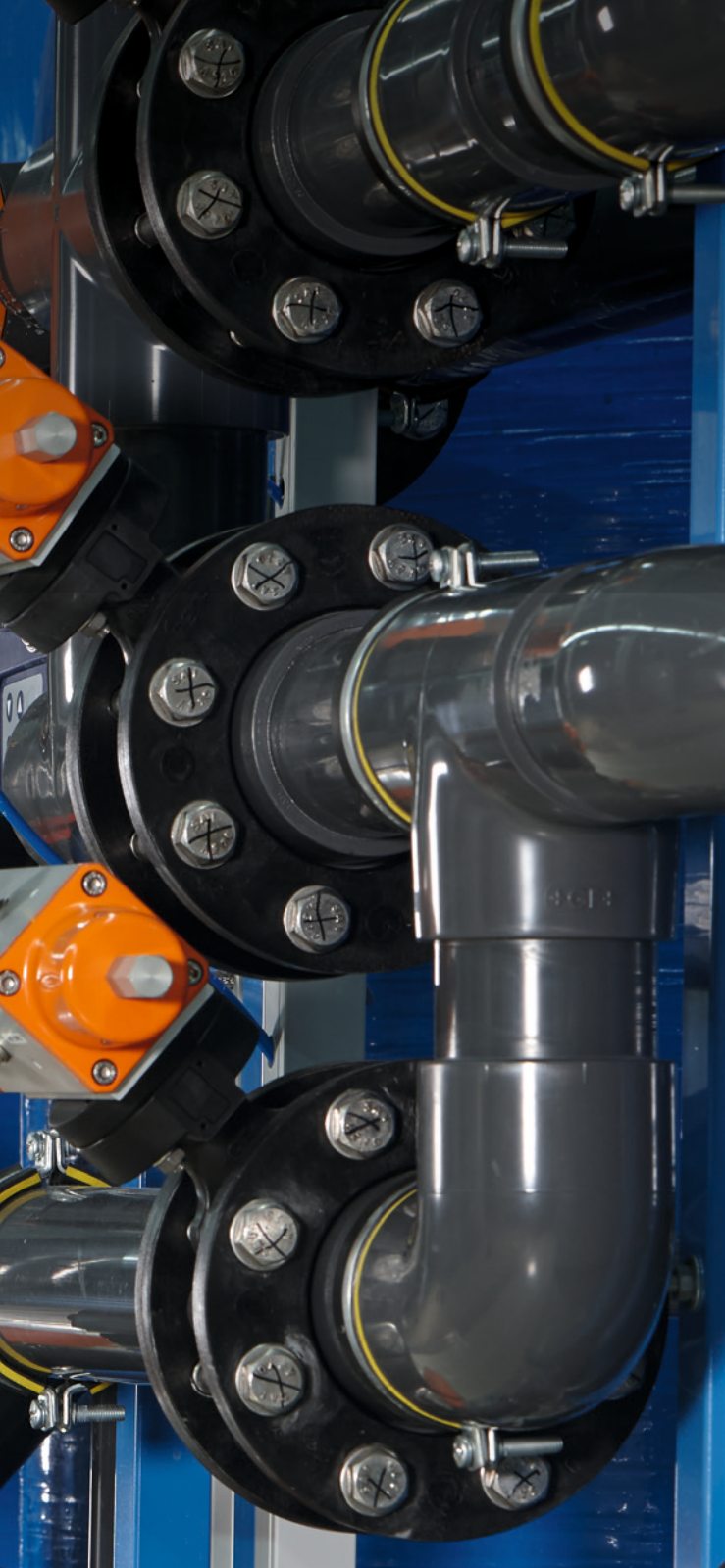
+ **Silicone-free**



PVC-U

# Highly efficient and cost-effective

The assortment covers the dimension range from d6 to d400 (metric) and 3/8" to 8" (British Standard), and can be used up to a maximum temperature of 60°C. The maximum system pressure is 16 bar. The guaranteed compatibility between the individual system components simplifies and accelerates assembly, and significantly reduces installation costs.



## + Chemical resistance

PVC-U systems from GF Piping Systems are extremely resistant to many mineral acids, bases, and salts. Maintenance and servicing is minimized through preventing chemical corrosion.

## + Perfect mechanical jointing

Only GF Piping Systems has a uniform seal design that suits all flange adaptors. The flange adaptors can be used in combination with flat gaskets or o-rings, meaning fewer errors. Adapter unions and fittings to other materials (including metals: steel, malleable cast iron, copper) offer optimum flexibility and options for connection to other components (pumps, filters, etc.) in the pipe.

## + Our own formulations for the highest performance

Specially developed material compositions guarantee exceptional impact strength as well as improved chemical resistance. GF Piping Systems offers various PVC raw material types that have been optimized for their respective applications through in-house production (compounding).

## + Special production expertise

This special material is handled by experienced, highly specialized experts in the production. Optimized injection molding and cooling processes guarantee low-stress products with outstanding mechanical properties.



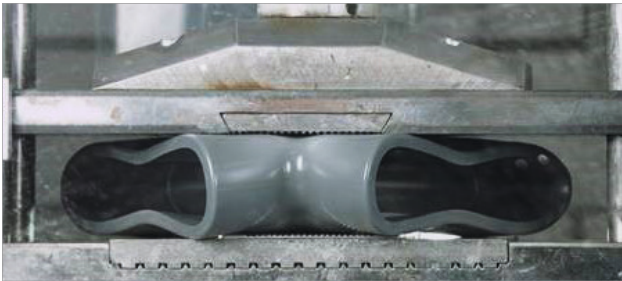
## Fittings

# Optimized fitting design increases safety and durability

At GF Piping Systems, the inspection intervals of numerous production monitoring processes are shorter and requirements are more stringent than specified by the standard. Extensive development tests in our accredited test laboratory give proof of the highest quality and reliability of our products.

### Optimum ductility

For example, a GF Piping Systems fitting must tolerate compression to at least 2/3 of its diameter, which demonstrates optimum ductility.



### Maximum burst pressure

Thanks to the special design, raw material, and careful production, the fittings achieve an extremely high maximum burst pressure of up to 100 bar.



### Dry fit

Pipes and fittings are perfectly matched and can be assembled dry up to medium (up to d75) dimensions. Combined with the highest level of angle precision, assembly thereby becomes considerably easier.

### PRO-FIT family

The PRO-FIT family of products features unique spigot-socket connections, enabling a direct connection between fittings. The integrated angle and cementing length markings on the fittings that can be dry-fitted are additional features. Less bonding and fewer pipe lengths saves time and money. The special design allows compact piping systems to be installed in even the smallest of spaces.



### Certificates and approvals

The quality is constantly monitored by numerous international approval bodies, including DIBt (Germany), KIWA (The Netherlands), CSTB (France), IIP (Italy), and BSI (United Kingdom). More than 50 certificates from around the world testify to the outstanding reliability of our raw materials and products.



# Pipes for the most demanding requirements

GF DEKA is synonymous with high-quality pipes with highly individual properties tailored to the exact application area. The variety of materials and continuous development of the processing technology, combined with a deep understanding of the relevant material properties, make us the ideal partner when it comes to PVC pipes.

### High-performance pipe

We offer PVC pipes up to dimension d110 with particularly thick walls. This increases the service life when transporting aggressive chemicals and reduces the risk of damage during handling, transport, and installation.

### Pipes for the food industry

Transporting and storing food is regulated by law in the EU. The Dekadur LHP pipes provide a unique combination of the advantages of PVC with the requirements of EC 10/2011 and EU 1935/2004.

### Transparent tubes for a clear view

PVC pipes are also available in a transparent version. Thus the user always has a clear view of what is happening in the pipe, making monitoring easy.

### Pipes for the chemical industry

Special formulations with low chalk content (<3 wt.%) and made from high-molecular PVC offer additional safety for the most aggressive media, thanks to the improved chemical resistance and a reduced diffusion rate. The pipes are colored troisdorfrot (troisdorf-red).

### Liner pipes for higher pressures or temperatures

Various PVC materials are available, including the innovative DekadurPlus, which is particularly resistant to chemicals.



# The right valve for your application



GF Piping Systems offers one of the most extensive ranges of valves on the market. A comprehensive selection of dimensions, materials, chemical resistance levels, standards, actuators, functions, and connections make it possible for you to find the perfect valve for your application. The right valve selection in combination with the high quality of our products can significantly reduce overall operating costs.

The PVC-U pipe system can be supplemented and expanded using a wide range of valves:

- Ball valves for the highest modularity with full functionality
- Manual, pneumatic, and electric diaphragm valves for optimum flow geometry
- Non-return valves for a high degree of process reliability
- Comprehensive assortment of butterfly valves to meet every need

### Compact all-rounders

The innovative pressure regulating valves feature a completely revised valve design. By reducing the external geometry, the main customer requirement for a compact design was implemented, without compromising on performance in the application. No matter whether the application requires system pressure to be reduced or retained, we promise maximum performance with minimal space requirements.



# Time for the new Ball Valve 546 Pro

For more than 15 years, the Ball Valve 546 has been the global standard for industrial applications. The new generation's future-proof modular design ensures that whatever the technical or digital requirements, Ball Valve 546 Pro is ready to be incorporated into these needs today.

When optimizing a piping system, the Ball Valve 546 Pro is a decisive component in increasing overall efficiency. It helps to reduce service and retrofitting costs, lower the risk of operating errors and sabotage, and anticipate future requirements – from regulatory changes to digitization.

The Ball Valve 546 Pro meets today's demands on valve technology with the usual high quality standards of GF Piping Systems. Due to its uniform installation length compared to its predecessor and optional accessories, it can be easily and flexibly adapted to changing requirements.

- + **Ball valve with dead man's switch**
- + **Information via data matrix code**
- + **Monitoring with double sensor**
- + **User-friendly operation**



# Automation made easy



With the innovative portfolio from GF Piping Systems for measurement, control, and actuation technology, even complex systems can be easily automated. In combination with the high-quality piping systems, customers receive a total package of perfectly integrated components. Processes and systems can be reliably and continuously controlled and monitored.

## **Total solutions provider**

The automation loop from GF Piping Systems consists of three elements: measurement, control, and actuation. Measurement encompasses a wide range of measurement technologies for capturing different parameters. Most sensors are available in plastic and are offered with dedicated fittings, which perfectly integrate into the pipe system. Control comprises various control functions, from simple relays to PID controllers, as well as the usual communication technologies. Actuation includes pneumatic, electric, and magnetic actuators that can be combined with all kinds of valves and accessories.

- + **Accurate measurement**
- + **Precise control**
- + **Reliable actuation**
- + **Durable system solutions**
- + **Simple installation**
- + **Easy monitoring**

# Traditional and innovative

PVC-U pipe products can be jointed using solvent cementing and do not require expensive fusion machines or power supply.

## Traditional solvent-based adhesives

In order to meet all special requirements, such as applications with highly aggressive chemicals, drinking water, or contact with food, GF Piping Systems offers different special solvent-based cements.

## Innovative solvent-free adhesive

Together with the company Henkel, GF Piping Systems has developed an innovative, solvent-free 2-component adhesive that also has excellent technical properties such as a long open time and rapid pressure application for repair work.



### Tangit PVC-U

- Cementing PVC-U
- Long open time of four minutes
- Exceptional gap filling properties



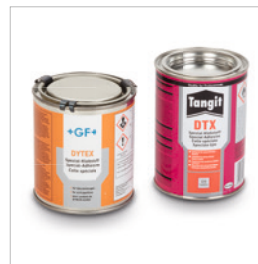
### Tangit Plus

- Cementing PVC-U
- THF-free solvent cement
- Open time of up to three minutes
- Drinking water approval



### Tangit PVC-C

- Cementing PVC-C
- Permanent temperature resistance up to 80°C
- Especially suitable for hot water applications
- Good chemical resistance



### Tangit DTX/DYTEX

- Cementing PVC-U and PVC-C
- Special adhesive for aggressive media
- DYTEX from GF Piping Systems, not gap filling, especially for sulfuric acid (93% – 96%)



## Tangit Rapid: the first solvent-free adhesive

- Clean with Tangit KS cleaner
- Drinking water approvals in D, F, NL, and UK
- Long open time of 8 minutes
- Ideal for large dimensions and ongoing operation
- Very fast curing at 4 bar/h
- Alignment of components during cementing
- Also ideal for repair work





# Safe and reliable



**From the characteristics of the raw material to the quality control of the finished part: GF Piping Systems tests compliance with the guaranteed characteristics thanks to its unique laboratory competence**

GF Piping Systems tests the material, jointing technology, and products down to the smallest detail beyond the measure specified by standards for pre-assembled parts testing at its accredited laboratory (ISO/IEC 17025) in Schaffhausen, Switzerland. The properties of the in-house developed PVC formulations are constantly being put to the test by GF Piping Systems. Despite decades of collaboration with material suppliers, the strict principle of "trust and verify" applies.

As a result, PVC and solvent cements were and continue to be continuously tested with chemicals under internal pressure and temperature in long-term conditions, such as those usually associated with water. Not only the influence of concentrated acids and alkalis on pipes, fittings, and joints can be tested; fittings in operation with chemicals are also evaluated. This means that you can be sure that the information

provided by our experts regarding chemical resistance is based on decades of experience and tests. If a new requirement is added, your medium is tested by GF Piping Systems under near-application conditions on real components.

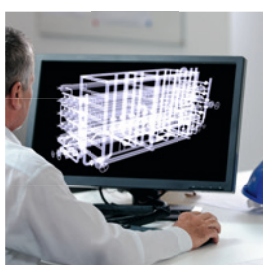
Additional details are also provided by the microscopic inspection of the parts structure and jointing. In addition to important insights regarding the production process and the correct connection, the effect of test and application conditions is also meticulously inspected. Has the product been attacked? Extremely experienced staff members examine the samples and products not only visually but also using analytical methods such as infrared microscopes.

# Specialized Solutions

Ready when you are

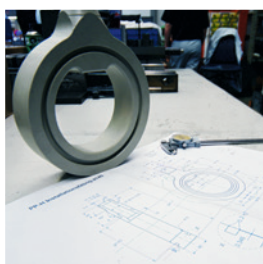
With Specialized Solutions, GF Piping Systems supports the design and installation of state of the art plastic piping systems, so that owners and planners can concentrate on their daily business without interruption. GF Piping Systems is present every step of the way, from providing planning support on new projects to testing the condition of old systems.

## Recommended services



### Engineering

We check the design of your piping system, support you with the choice of materials and components, and help with correct installation. We thus help you significantly reduce your own risks.



### Customizing

Customized special parts and solutions for special tasks are available in all required dimensions. Even unusual applications in challenging installation scenarios can be implemented easily, safely and on time.



### Cementing training course

In this training course, we share GF Piping Systems' 65 years of experience with cemented pipes. Consisting of both theoretical and practical components with an examination at the end, optionally in accordance with DVS 2221.



### Digital Product Libraries

The digital product libraries by GF Piping Systems allow planning with real-life dimensions and automatically generated parts lists, facilitating digital cooperation. They help reduce planning errors and shorten your project times.



## Online flange tool

The right components and optimum tightening torque are crucial for permanently leak-proof and durable flange connections. Nevertheless, uncertainties often arise when it comes to making a selection. This online tool helps to determine components and tightening torque. The tool is currently only available for metric pipes. Select the material and dimension of the pipe and as well as the possible parameters for the installation point: with or without valve, flange, and seal type. As a result, you are given the length and number of recommended screws as well as the optimum tightening torque. In addition, you see the code numbers for all components of the corresponding products from GF Piping Systems. The results can be printed out or sent via e-mail.

More information at:

[www.gfps.com](http://www.gfps.com)



+GF+

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

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