

Ship Building

Your applications  
→ our systems

# Plastic Applications wi



**Hot and Cold Fresh Water:**  
INSTAFLEX® (PB),  
AQUASYSTEM (PP-R)



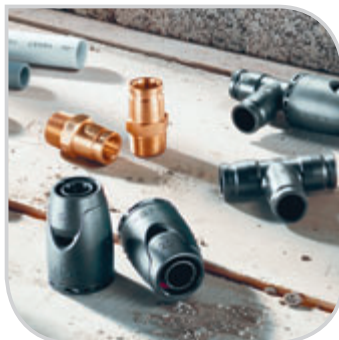
**Refrigeration  
below 0°C:**  
ABS, PE 100,  
COOL-FIT



**Grey and Black Water:**  
FUSEAL Sea Drain (PPFR),  
PVC, ABS



**Air Conditioning:**  
ABS, PE 100



**Hot and Cold Fresh Water:**  
iFIT the Tool-less System

# th GF Piping Systems



**Sea and Fresh Water Cooling:**  
PE 100, ABS



**Ballast Systems:** PE 100



**Water Treatment**  
(drinking water, waste water and swimming pools): PVC-C, PVC-U, PP-H, PE, ABS, PB

**Approvals.** GF Piping Systems has a whole range of approvals from all the major classification societies.

Material system	Classification Society							RMRS
	GL	LR	BV	RINA	ABS	DNV	CCS	
ABS	•	•	•	•	•	•		•
PVC-C	•	•	•	•	•	•	•	•
PVC-U	•	•	•	•		•	•	•
PE 100	•	•	•	•		•	•	•
PP-H		•	•	•		•		
INSTAFLEX® PB	•	•	•	•	•	•	•	•
PP-R Aquasystem	•	•		•	•	•		
iFIT	•	•				•		•
FUSEAL Sea Drain	•	•				•		•



## Systems in combination

### ▶▶ INSTAFLEX PB d 16 to d 225

Pipes in bars or coils  
Fitting and valves  
Installation accessories

### ▶ Jointing technology

Compression fittings  
Socket fusion fittings  
Electrofusion sockets  
Butfusion (d 125, d 160, d 225)

### ▶▶ iFIT – the tool-less push-fit fitting system

d 16-d 32  
Innovative modular fitting system with modules and adapters  
Polybutene pipes and multi-layer composite pipes (PE-RT-AL-PE)

### ▶ INSTAFLEX PB and iFIT application ranges

PN 16 hot and cold water  
(16 bar at 20 °C)  
(10 bar at 70 °C)  
(6 bar at 95 °C)  
Temperature range 0°–95 °C

### ▶▶ AQUASYSTEM (PP-R)

d 20–d 110  
Socket fusion fittings, electrofusion couplings

### ▶ AQUASYSTEM application ranges

PN 10 cold water (10 bar at 20 °C)  
PN 20 hot water (8 bar at 70 °C)  
Temperature range 0–80 °C

[www.iFIT.georgfischer.com](http://www.iFIT.georgfischer.com)



**Easy installation technology.** Our electrofusion fittings permit fast, efficient and economical installation of the systems. In combination with the iFIT push-fit system, the cabins are easily connected from the main pipe to the toilets, showers and sinks. And entirely without fusion, soldering, flames, smoke or compression noise. With INSTAFLEX PB, AQUASYSTEM and iFIT your installations are safe and reliable.

# Hot and cold water distribution

INSTAFLEX PB, iFIT, AQUASYSTEM (PP-R)



## Hot and cold water distribution.

Our INSTAFLEX PB and AQUASYSTEM (PP-R) systems in combination with iFIT are ideally suited for drinking water distribution on all types of ships. Cabins, kitchens, restaurants and bars are optimally supplied with fresh water. The high flexibility of the PB material and the easy installation technology cut time and costs to a minimum.

## Pre-fabrication warrants shorter building time.

With INSTAFLEX PB it is possible to pre-fabricate pipelines in coils, up to 70 m including all the outlets. Flexibility branch positioning with welding saddle of AQUASYSTEM (PP-R). These are then installed in the decks and connected to the cabins with the iFIT system. Our hot and cold water distribution solutions are system-related and therefore ideal for new buildings, renovation projects and the repair of conventional systems. The high quality plastics PB, PP-R and PPSU are guaranteed corrosion-free and have a very long service life.



▶▶ **Systems for water treatment**

- PVC-U d 12–d 225
- PVC-C d 16–d 225
- PP-H d 16–d 400
- PE d 20–d 400
- ABS d 16–d 315

- ▶ Pipes, fittings, measurement and control instruments, valves and installation tools

▶▶ **System features**

- PVC-U 0–60 °C
- PVC-C 0–80 °C
- PP-H 0–80 °C
- PE 100 -40 °C to +60 °C
- ABS -40 °C to +60 °C
- PN 10

▶▶ **Media**

- Seawater
- Fresh water
- Osmosis water
- Deionized water



**High economic efficiency and long service life.** PVC-U and PVC-C piping systems have become the worldwide leading industrial systems for water treatment thanks to their special features. GF Piping Systems has been producing these plastic piping systems since 1957. Whether for treatment of drinking water or swimming pool water – with plastic systems from

GF Piping Systems you know you have a recognized and time-tested solution for Ship Building.

**Compact solutions from GF Piping Systems.** To enable compact constructions, we have developed special components. And with our modular automation and SIGNET measurement and control technology you are assured flexible

# Water treatment systems

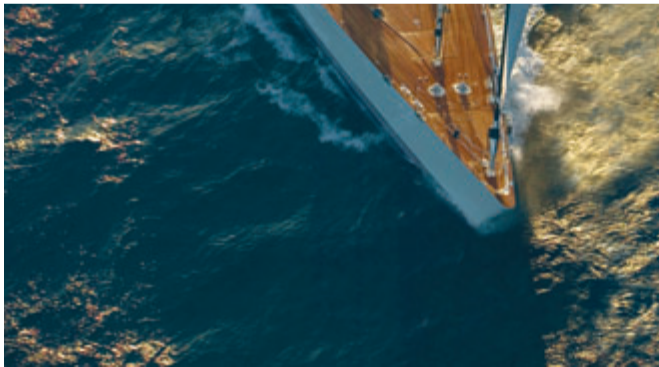
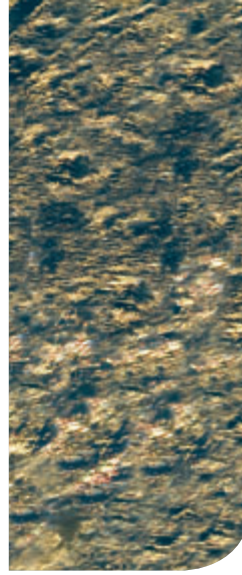
for drinking water, seawater, waste water, swimming pools and whirlpools with PVC-U, PVC-C, PP-H, PE and ABS systems



and efficient measurement and control. The water treatment systems can be pre-fitted by the manufacturer and subsequently installed on the ships as compact units. Modules, pre-assembled with measurement and control technology, are built directly into the piping systems. Water treatment systems for a variety of applications on ships are

generated from these individual modules. Whether for drinking water, swimming pools, whirlpools or for waste water treatment, GF Piping Systems has the solution. **Measurement and control technology.** We offer complete solutions in plastic for water treatment and distribution, including automated

valves (pneumatic and electric actuators). SIGNET systems for flow measurement, for pH value measurement, for pressure and temperature measurement and for conductivity measurement are also included in our scope of performance.



▶▶ **System features FUSEAL R Sea Drain**

Material PPFR (PP Flame Retardant)  
d 1½" to 6"  
PN 1.76 (with safety factor 4)  
Vaccum 10 Inches relativ = (-0,34 bar)  
Temperature 80°C constant load, 95°C short-term load  
Drainage system with high corrosion resistance, even for chemically contaminated waste water

▶▶ **ABS**

Material ABS (Acrylonitrile butadiene styrene)  
d 16-d315  
PN 10 (10 bar at 20°C)  
-40°C to +60°C  
Pipes and fittings  
Special components also possible  
Especially useful for repairs



**Waste water pipes for aggressive effluents.**  
Appropriate pipes for conducting water from toilets, showers and the kitchens are essential for the safe operation of cruise ships.



# Grey and black water

## FUSEAL Sea Drain, ABS



**Pre-fabricated solutions for grey and black water applications.** Grey and black water systems from GF Piping Systems are a major contributing factor to safety in the cabins. The all-plastic, durable systems complement our drinking water systems ideally. Our modern electrofusion technology or adhesive jointing technology is conducive to fast installation and the highly diversified product mix provides installers with the flexibility they require. For custom-made solutions we offer our pre-fabrication service.

**Our FUSEAL Sea Drain and ABS systems.** With these systems you have a choice of excellent solutions for grey and black water conveyance. FUSEAL Sea Drain – the fire retardant drainage system – is extremely resistant to corrosion and uses the electrofusion jointing method. Adapter unions for the transition from plastic to metal enable a fast connection in case of repairs and renovation of existing systems.



► **Complete systems**

ABS: d 16 – d 315  
PE 100: d 20 – d 400

► Pipes, fittings, valves, measurement and control devices

► Parameters  
PN 10 (10 bar at 20 °C)  
Working temperature  
ABS: -40 °C to +60 °C  
PE 100: -40 °C to +40 °C

► Media  
Water  
Ice water  
Ice slurries  
Saline solutions (organic)  
Glycol-water mixture  
Alcohol-water mixture

► Not suitable for refrigerants:  
R 22, R 407, etc.  
ammonia  
CO<sub>2</sub>

[www.cool-fit.georgfischer.com](http://www.cool-fit.georgfischer.com)



COOL-FIT reduces your installation time, energy loss and service costs.



**A variety of cooling methods.** ABS with or without Armaflex NH is the perfect solution for fresh or seawater cooling, for instance in fish processing plants. In standard practice, cold water distribution networks are susceptible to corrosion – both from the inside as well as from the outside. ABS is a corrosion and incrustation-free material that is also free of halogens. Noted for its applications at ex-

tremely low temperatures, -40 °C to +60 °C, this material is particularly suited for these distribution systems. No fusion or soldering required. The time-tested cementing technique renders the system easy and safe to operate. Due to the low weight of the plastic, it is also fast and effortless to install.

# Sea and fresh water cooling Refrigeration below 0 °C

ABS and PE 100



## Fresh water bunker lines



### **COOL-FIT – the pre-insulated plastic system.**

An ideal system for secondary cooling and air-conditioning applications. Here, ABS, which is used to carry the medium, is insulated with PUR foam and encased with a PE pipe. Thanks to the new COOL-FIT nipple, pre-insulated pipes and fittings are cemented quickly. This inner cementing has the decisive advantage that no insulation needs to be removed. In other words, COOL-FIT reduces your installation time, energy loss and service costs.

**Fresh water bunker lines in PE.** PE 100 is an excellent choice of material for bunker lines. PE100 joined with electrofusion sockets (ELGEF Plus), especially in the large dimensions d110 to d315, has been used successfully on a number of cruise ships. The electrofusion sockets are the ideal solution here in combination with butt fusion. Fresh water in varying qualities negatively affects the product life of metal pipes, but not of plastic pipes. The low weight, high resistance and easy handling are further advantages of PE 100.

# GF Piping Systems → worldwide



Our sales companies and representatives on location provide you with support in over 100 countries.

For more information on Ship Building:

[www.piping.georgfischer.com](http://www.piping.georgfischer.com) → Solutions → Ship Building

The technical data is not binding and not an expressly warranted characteristic of the goods. It is subject to change. Please consult our General Conditions of Supply.

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