

# GF Piping Systems supply to the mining industry

## Areas of use

- Water distribution
- Chemical dosing & distribution
- Desalination
- Compressed air
- Safety showers & eyewash
- Power stations
- Water treatment
- Freeze prevention

Plastic piping systems have been relied on for decades to convey media; whether it is water, slurries or hazardous chemicals used in mineral processing. GF have the piping systems to suit.

GF solutions are applicable over a broad temperature range, from freezing to boiling temperatures. The harsh environment within mining sites and the conveyance of chemicals place high demands on the piping systems in terms of safety, reliability, economy and maintenance.

## + Water

- Raw water
- Desalination
- Water treatment
- Process water
- De-watering
- Dust suppressing
- Safety showers & eyewash

## Final Products

- Copper/silver
- Lithium
- Gold
- Lead/zinc
- Coal
- Rare earths
- Nickel
- Bauxite
- Iron Ore
- Uranium

## + Ore Benefication

- Grinding
- Flotation
- Thickening
- Classification

## + Hydrometallurgy

- Leaching
- Solvent extraction
- Electrowinning
- Adsorption
- Merrill crowe
- Elution
- Tailings disposal

GF Piping Systems

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 Brisbane  
 Mackay (Distributor)  
 Melbourne  
 Perth



GF Piping Systems



# Mining

## Plastic piping systems in mining applications

GF Piping Systems

# Building the lifelines of the world

GF Piping Systems is one of the three core businesses of the Georg Fischer Corporation, founded in Switzerland in 1802. With over 65 years of experience in plastics, GF Piping Systems is dedicated to designing and manufacturing complete plastic piping systems for the safe and secure conveyance of water, abrasive and aggressive liquids, as well as gas.

## + Local support

GF Australia supports the mining industry with its National Sales & Distribution Centre located in **Sydney**. Branch offices and distributors are located in **Adelaide, Brisbane, Mackay, Melbourne** and **Perth**.

GF Piping Systems combined with a distributor network across Australia and New Zealand are well positioned to provide solutions for all plastic piping applications.

## + Condition analysis

The integrity of a piping system is essential for water and gas utilities. GF Australia offers **Ultrasonic NDT (Non-Destructive Testing)** at the installation for PE electrofusion and butt fusion, while Pipe Condition Assessment can be employed during operation to acquire real data about the state of piping systems.

## + Customisation and pre-fabrication

GF Australia's pre-fabricated multi-service end to end solutions will give you a decisive advantage in today's ever-changing and competitive built environment. Housed in a large, dedicated area of our Brisbane facility, fully trained GF personnel are able to fabricate turnkey solutions in any of our materials to meet your project requirements.

## + Quality, safety and sustainability

GF defines sustainable business as responsible business activity focused on the long term. GF production facilities are certified to ISO 14001 (Environmental management system), and the company has the vision to become a sustainability and innovation leader providing superior customer value. Sustainability is not a stand-alone topic, but an essential core value of GF strategy and business.

- GF products manufactured to ISO, EN, ASTM or AS/NZS standards
- GF production facilities certified to ISO 9001 (Quality Management), ISO 45001 (Occupational Health and Safety Management), and ISO 14001 (Environmental Management).
- Fabrication of plastic pipe systems (GF Australia ISO 9001 certified factory)
- Environmental Product Declarations (EPD) certified to EN 15804+A1
- Water Services Association of Australia (WSAA) Appraised Products



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# Water



## Raw Water/ Process Water/ De-watering/ Dust Suppression

**GF Products:** 1 3 7

PE pipe and fittings are commonly used to distribute water to, from and around mine sites. Increasingly, legislation demands water movement be monitored or metered. GF flow measurement instruments are ideal for water monitoring.



## Water Treatment

**GF Products:** 1 2 3 4 7

Improving the quality of water to reduce its impact on the environment is always a challenge. Providing instrumentation, automation, valves, pipes and fittings, GF is the right partner for all water treatment applications.



## Safety Showers & Eyewash

**GF Products:** 9

COOL-FIT pre-insulated pipe, fittings and valves are delivered ready to install direct to site. Insulation is a high density Polyurethane with a black PE outer jacket, UV and weathering resistant; ideal for eyewash stations, safety showers and keeping water cool.

# Ore Benefication



## Evaporation Ponds

**GF Products:** 3

Mineral-carrying brines must be evaporated before further refining. Sometimes waste brine is also evaporated to lower waste flows. The highly concentrated brines are extremely corrosive, making thermoplastic the best option for piping. Additional chemicals (soda ash) added for pre-processing are also best conveyed and prepared in plastic pipes. GF products are used to transport brines before and after evaporation.



## Grinding

**GF Products:** 3 6

Involves rotating cylindrical mill containing a charge of loose grinding media. Water is added to the mill. Ore is ground to form a slurry. GF Products are used for transport of process water and slurry.



## Flotation and Thickening

**GF Products:** 1 3 6

De-watered slurry from grinding enters the flotation circuit. Air bubbles and reagents are introduced into slurry. For thickening, removal of suspended solid particles from liquid flocculants are often used. Dilute slurry enters a feed well. GF Products are used for transport of process water and slurry.



## Classification

**GF Products:** 3

Cyclones are most commonly utilised in the classification of ore particles. A rotation of slurry inside the cyclone causes centrifugal force to move particles outwards. Larger mass particles migrate downward on the walls of the cyclone and discharged as underflow. Finer particles and water migrate upwards and discharge as overflow. GF Products are used for transport of ore feed, overflow and underflow.

# Hydrometallurgy



## Leaching

**GF Products:** 1 2 3 4 5 7 8

Leaching involves extraction of a soluble constituent from a solid by solvent. Bacterial Leaching uses naturally-occurring bacteria to harmlessly oxidize ore that is high in sulphides, thus making processing of the ore much easier and more cost effective.



## Solvent Extraction/ Electrowinning

**GF Products:** 1 2 3 4 5 7 8

Mass transfer operation based upon chemical difference. Feed solution containing solute to be extracted and feed solvent as a solute extractor. GF products are used in chemical processing and transport the liquid. Copper sulfate in solution coming from SX is electrochemically deposited in plates. This raffinate is extremely corrosive to metals.



## Adsorption/ Merrill Crowe

**GF Products:** 1 2 3 4 5

Adsorption is a process where a solid is used to remove a soluble substance from an aqueous solution. GF product applications: safe transport of Sodium Cyanide (NaCN) in double contained pipe work (CONTAIN-IT and CONTAIN-IT Plus exclusive to GF).



## Elution

**GF Products:** 1 2 4 5 8

Acid washing removes gold from carbon by adjusting pH and temperature. GF Product Applications: safe transport of Sulfuric Acid (H2SO3), Hydrochloric Acid (HCl), Nitric Acid (HNO3) or Caustic Soda (NaOH).



## Tailings Disposal

**GF Products:** 3

GF Product Applications: waste transport



Material, operating temperature and pressure are decisive for the selection of right piping system

System	Operating temperature	Dimension
ABS	-50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150	d16 - d315, 3/8 - 8"
CONTAIN-IT Plus	-50 °C to +60 °C (d250 - d315 oper. temp. +40 °C)	d50/20 - d315/225
CONTAIN-IT	-50 °C to +140 °C	3 + 4 + 6" outer
COOL-FIT 2.0	-0 °C to +60 °C (outer)	d32 - d140
COOL-FIT 4.0	0 °C to +60 °C	d32 - d450
ecoFIT	-50 °C to +60 °C	d20 - d630*
ELGEF Plus	-50 °C to +60 °C	d20 - d2000
Compression fittings	-10 °C to +45 °C	d16 - d110
MULTI/JOINT	-5 °C to +50 °C	d50 - d2000
PROGEF Natural	0 °C to +80 °C	d20 - d110
PROGEF Standard	0 °C to +80 °C	d16 - d500
PROGEF Plus	0 °C to +80 °C	d20 - d315
PVC-C	0 °C to +80 °C	d16 - d225, 1/4 - 24"
PVC-U	0 °C to +60 °C	d6 - d400, 1/8 - 24"
PVC-U clear	0 °C to +60 °C	1/4 - 12"
SYGEF ECTFE	0 °C to +80 °C	d20 - d110
SYGEF Plus & Standard	-20 °C to +140 °C	d16 - d450



## Chemical resistance online tool

Not every pipe material is suitable for transporting aggressive liquids and gases. The use of incorrect materials can lead to problems. With this online tool, you can now find the right materials for your project both quickly and easily. Scan the QR code and find out more.

## PVC-U System 1



**Product Range:** 6mm-400mm (ISO/DIN/JIS) 1/2"-24" (BS/ASTM)  
**Pressure:** Up to 16 bar  
**Temperature:** 0°C to +60°C  
**Joining Technology:** Solvent cementing  
**Material:** PVC-U  
**Valve:** Manual, actuated

## PVC-C System 2



**Product Range:** 16mm-225mm (ISO/DIN/JIS) 1/4"-24" (BS/ASTM)  
**Pressure:** Up to 16 bar  
**Temperature:** 0°C to +80°C  
**Joining Technology:** Solvent cementing  
**Material:** PVC-C  
**Valve:** Manual, actuated

## PE System 3



**Product Range:** 20mm-1200mm (ISO/DIN) 3/4"-36" (ASTM)  
**Pressure:** Up to 16 bar  
**Temperature:** -50°C to +60°C  
**Joining Technology:** Electrofusion, Socket-, Butt-, IR Plus fusion  
**Material:** PE  
**Valve:** Manual, actuated

## PP System 4



**Product Range:** PROGEF Standard: 16-500mm PROGEF Natural: 20-110mm  
**Pressure:** Up to 10 bar  
**Temperature:** 0°C to +80°C  
**Joining Technology:** IR Plus-, Socket-, Butt-, BCF fusion (PROGEF Natural only)  
**Material:** PP  
**Valve:** Manual, actuated

## PVDF System 5



**Product Range:** SYGEF Standard: 16-450mm SYGEF Plus: 20-450mm  
**Pressure:** Up to 16 bar  
**Temperature:** -20°C to +140°C  
**Joining Technology:** IR Plus-, Socket-, Butt fusion  
**Material:** PVDF, ECTFE  
**Valve:** Manual, actuated

## Compression Fittings 6



**Product Range:** d16mm-d110mm Couplings, tees, bends, reducers and saddles, transition fittings, universal fittings  
**Temperature:** -10°C to +45°C  
**Pressure:** Up to 16 bar (complete range DWVG approved PN16)  
**Joining Technology:** Mechanical joints  
**Material:** PP  
**Approval:** Watermark registered

## Instrumentation 7



**Product Range:** Flow, conductivity, pH, ORP (Redox), temperature, pressure, level, dissolved oxygen, turbidity and chlorine  
**Joining Technology:** Special installation fittings, strap on saddles, ISO/NPT pipe threads  
**Material:** PP, PVC-U, PVC-C, PVDF, Ryton body, PTFE junction, 316L stainless steel

## Double Containment 8



**Product Range:** Medium: 20-225mm Protection: 50-315mm  
**Temperature:** -50°C to +140°C depending on medium pipe  
**Joining Technology:** Cementing, Socket-, IR Plus-, Electrofusion, Butt fusion, PE100 for jacket pipe  
**Material:** PP, PVC-U, PVC-C, PVDF for medium pipe  
**Valve:** Manual, actuated

## COOL-FIT 4.0 9



**Product Range:** d32/90mm-d225/315mm (Medium/outer jacket)  
**Pressure:** Up to 16 bar  
**Temperature:** -50°C to +60°C  
**Joining Technology:** Electrofusion  
**Material:** PE100  
**Insulation:** GF HE foam, halogen-free, closed-pore  
**Outer jacket:** HDPE pipe; GF HE foam fitting  
**Valve:** Manual, actuated

## Solvent Cement



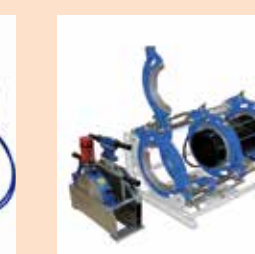
**Product Range:** Tangit, Dytex  
**Temperature:** -5°C to +60°C, recommended working temperature  
**Material:** PVC-U, PVC-C

## Electrofusion



**Product Range:** MSA 2.0, MSA 2.1, MSA 4.0, MSA 4.1, MSA 330, MSA 340, MSA 2 Multi, MSA 2 CF  
**Temperature:** -20°C to +50°C working temperature  
**Material:** PE, PP, PB, PVDF

## Butt Fusion



**Product Range:** 40mm-1200mm  
**Temperature:** +5°C to +40°C, recommended working temperature  
**Material:** PE, PP, PVDF, PB

## IR / BCF



**Product Range:** 20mm-1200mm  
**Joining Technology:** Infrared fusion - IR Plus technology, Bead and crevice free fusion - BCF technology  
**Material:** PP, PE, PVDF, PB