

# Supply to the Mining Industry

- ▶ Grinding
- ▶ Flotation
- ▶ Thickening

Water

- ▶ Acid Leaching
- ▶ Bacterial Leaching
- ▶ Solvent Extraction
- ▶ Adsorption
- ▶ Elution
- ▶ Tailings Disposal

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.

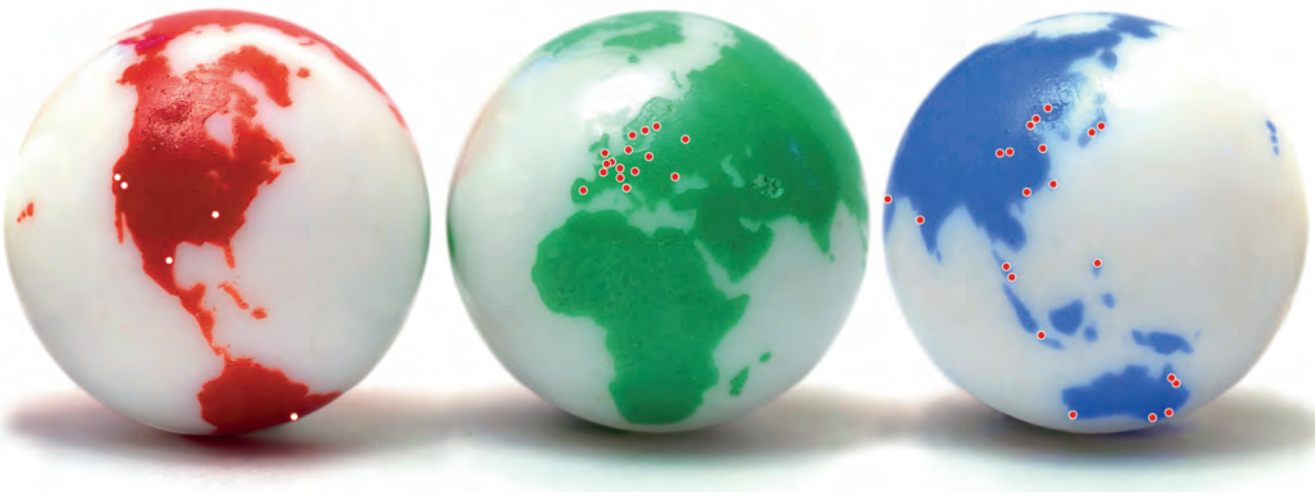
- Mining applications include:
- › Water Distribution
  - › Chemical Distribution
  - › Compressed Air
  - › Safety Showers & Eyewash
  - › Power Stations
  - › Water Treatment

Corrosion is no longer a problem when choosing the appropriate GF piping and fluid control system.

The harsh environment within mining sites and the conveyance of chemicals place high demands on the piping systems in terms of safety, economy and maintenance.



## GF Piping Systems – worldwide at home



**Georg Fischer Piping Systems (Switzerland) Ltd.**  
Ebnetstr. 101  
8201 Schaffhausen  
Switzerland  
Phone +41(0)52 631 30 03  
Fax +41(0)52 631 28 93  
info.export@georgfischer.com  
www.export.georgfischer.com

**Georg Fischer International  
Sales Office Dubai**  
P.O. Box 2345  
Dubai  
United Arab Emirates  
Phone +971 (4) 289 4960  
Fax +971 (4) 289 4957  
E-Mail: gcc.ps@georgfischer.com

Further technical information:  
www.export.georgfischer.com  
› Support/Planning Fundamentals

Your local partner:

**Georg Fischer International  
Representative Office Russia**  
1st Tverskaya-Yamskaya str. 23  
125047 Moscow  
Russia  
Phone +7 (495) 258 60 80  
Fax +7 (495) 258 60 81  
E-mail: ru.ps@georgfischer.com

**Georg Fischer International  
Branch Office Romania**  
Str. Giuseppe Verdi nr. 9A, Sector 2  
020257 Bucuresti  
Romania  
Phone +40 (0) 37 274 1318  
Fax +40 (0) 31 104 0492  
Fax +40 (0) 21 231 7479  
E-Mail: ro.ps@georgfischer.com

The technical data are not binding. They neither constitute expressly warranted characteristics nor guaranteed properties nor a guaranteed durability. They are subject to modification. Our General Terms of Sale apply.

GFVG\_1022\_2\_106.121  
© Georg Fischer Piping Systems Ltd  
CH-8201 Schaffhausen/Switzerland, 2012  
Printed in Switzerland

**+GF+**

**GEORG FISCHER  
PIPING SYSTEMS**



Mining



From Applications  
to Products

# GF Piping Systems

• Georg Fischer Piping Systems (GFPS) is one of the three core businesses of the Georg Fischer Corporation, founded in Switzerland in 1802. With over 50 years experience in plastics, GFPS is a leading supplier of plastic piping systems with global market presence.

• GFPS supports the mining industry with its Sales Companies and Distributors worldwide.

• GFPS is dedicated to designing, manufacturing and marketing piping systems for the safe and secure conveyance of liquids and gases.

• GFPS combined with a worldwide distributor network are well positioned to provide solutions for all plastic piping applications.

Ore  
Beneficiation

- Raw Water +
- Water Treatment +
- Process Water +
- De-Watering +
- Safety Showers & Eyewash +

Hydrometallurgy



Pipes & Fittings



Valves & Automation



Machines & Tools



Instrumentation



Project Management

**+GF+**

**GEORG FISCHER  
PIPING SYSTEMS**

# Plastic Piping Systems in Mining Applications

Water



## Raw Water/ Process Water/ De-watering

GF Products: **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 Signet Magmeter flow range**, is 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. **For 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 and fittings are delivered ready to install direct to site.** Insulation is a high density PUR with a black PE outer jacket, UV and weathering resistant; ideal for eyewash stations and safety showers and keeping water cool.

Ore Beneficiation



## 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

GF Products: **① ③ ⑥**  
De-watered slurry from grinding enters the flotation circuit. Air bubbles and reagents are introduced into slurry. **GF Products are used for transport of process water and slurry.**



## Thickening

GF Products: **① ③ ⑥**  
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, flocculent, ore feed and slurry.**

Hydrometallurgy



## Acid Leaching

GF Products: **① ② ③ ④ ⑤ ⑦ ⑧**  
Involves extraction of a soluble constituent from a solid by solvent. **GF Product Applications: safe transport of Sulfuric Acid (H<sub>2</sub>SO<sub>3</sub>), Hydrochloric Acid (HCl), Nitric Acid (HNO<sub>3</sub>), Sodium Cyanide (NaCN) or Caustic Soda (NaOH)**



## Bacterial Leaching

GF Products: **③ ④**  
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

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.**



## Adsorption

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**  
Acidwashing removes gold from carbon by adjusting pH and temperature. **GF Product Applications: safe transport of Sulfuric Acid (H<sub>2</sub>SO<sub>3</sub>), Hydrochloric Acid (HCl), Nitric Acid (HNO<sub>3</sub>) or Caustic Soda (NaOH)**



## Tailings Disposal

GF Products: **③**

**GF Product Applications: waste transport**

GF Project Management Team is dedicated to the coordination and management of tenders and projects. Prompt communication ensures efficiency, accuracy and timely delivery.

GF Customer Service provides customers with suitable product selection, quotations, order processing and after sales service; putting customers first.

GF has a strong network of distributors and offices providing effective coverage of sales, on-site support and services around the globe.



Distribution



Project Management



Customer Service

One-Stop Shopping



Product Development



Training

GF has worldwide dedicated Training Centres and provides:

- On-site training
- Contractor training
- Technical seminars for design and engineering teams

All GF products are manufactured according to International Standards. All products are stringently tested in accredited test laboratories. GF production and management are globally certified to ISO9001 and ISO14001.

Targeting specialised applications in mining, GF has developed several products including:

- Static Mixer and Injection Points
- FM approved Fire Fighting Systems
- Compressed Air Systems

Joining Technology

## Solvent Cement



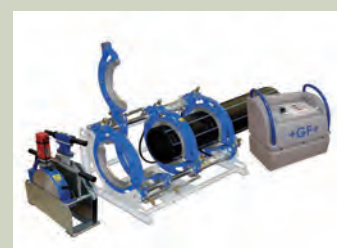
Product Range: Tangit, Dytex  
Pressure: Up to 16 bar  
Temperature: 0°C to +60°C  
Jointing Technology: Solvent cementing  
Material: PVC-U, PVC-C and Cool-FIT

## Electrofusion



Product Range: MSA 210, MSA 230, MSA Plus 250, MSA Plus 300, MSA 330, MSA 340, MSA Plus 400  
Temperature: -10°C to +45°C working temperature  
Transformer Technology: MSA 210,230,330,340: standard MSA Plus range: inverter  
Material: For welding PE Electrofusion fittings

## Butt Fusion



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

## IR / BCF



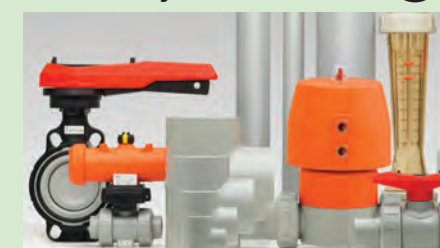
Product Range: 20mm-1200mm  
Jointing Technology: Infrared fusion - IR Plus technology, Bead and crevice free fusion - BCF technology.  
Material: PP, PE, PVDF, PB

## PVC-U System ①



Product Range: 6mm-400mm (ISO/DIN/JIS) 1/4"-16" (BS/ASTM)  
Pressure: Up to 16 bar  
Temperature: 0°C to +60°C  
Jointing Technology: Solvent cementing  
Material: PVC-U

## PVC-C System ②



Product Range: 16mm-225mm (ISO/DIN/JIS) 3/8"-12" (BS/ASTM)  
Pressure: Up to 16 bar  
Temperature: 0°C to +80°C  
Jointing Technology: Solvent cementing  
Material: PVC-C

## PE System ③



Product Range: 20mm-1200mm (ISO/DIN) 1/2"-12" ASTM  
Pressure: Up to 16 bar  
Temperature: -50°C to +60°C  
Jointing Technology: Electrofusion, Socket fusion, Butt fusion, IR Plus fusion  
Material: PE

## PP System ④



Product Range: 16mm-500mm PROGEF® Standard 20mm-63mm PROGEF® Natural  
Pressure: Up to 10 bar  
Temperature: -10°C to +95°C  
Jointing Technology: IR Plus fusion, Socket fusion, Butt fusion (PROGEF® Natural only)  
Material: PP

## PVDF System ⑤



Product Range: 16mm-315mm  
Pressure: Up to 16 bar  
Temperature: -20°C to +140°C  
Jointing Technology: IR Plus fusion, Socket fusion, Butt fusion  
Material: PVDF

## Compression Fittings ⑥



Product Range: 16mm-110mm  
Couplings, tees, bends, reducers and saddles, transition fittings, universal fittings  
Pressure: Up to 16 bar in water, blue line Up to 10 bar, black line  
Jointing Technology: Mechanical joints  
Material: PE, PP

## Instrumentation ⑦



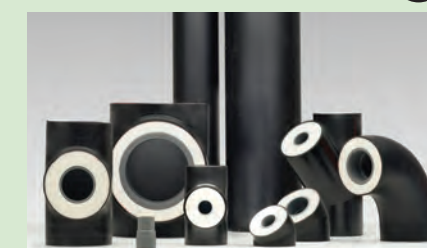
Product Range: DN10 to DN2000 as Flow-, Conductivity-, pH/ORP, Temperature, Pressure-, Turbidimeter and Chlorine Analyser  
Jointing Technology: Special installation fittings, Strap on saddles, ISO/NPT pipe threads  
Material: PP fibreglass reinforced, PVDF, 316L stainless steel

## Double Containment ⑧



Product Range: 20/50mm-225/315mm (Medium/Protection)  
Temperature: -40°C to +140°C (depending on medium pipe)  
Jointing Technology: Solvent cementing, Socket fusion, IR Plus fusion, Electrofusion, Butt fusion, PE100 for Jacket Pipe  
Material: PE100, PP, PVC-U, PVC-C, PVDF for Medium Pipe

## COOL-FIT™ ⑨



Product Range: 16mm-315mm (ISO/DIN/JIS) 3/8"-8" (BS)  
Pressure: Up to 16 bar  
Temperature: -50°C to +60°C  
Jointing Technology: Solvent cementing  
Material: ABS, PUR insulation for COOL-FIT, PE jacket for COOL-FIT