

# AGRUCHEM

INDUSTRIAL  
PIPING SYSTEMS





# The Plastics Experts.

AGRUCHEM industrial piping systems have proven their value for decades in industrial plants around the globe. The various systems are characterised by outstanding operational reliability, easy installation and extremely low maintenance overheads. Be it leakage-monitored double containment piping systems, abrasion-resistant multilayer systems, or the ECTFE system, which is even resistant to nitric acid, AGRU has the best solution for virtually any industrial application in its portfolio.

The AGRU success story has been unfolding now for around seven decades. Founded back in 1948 by Alois Gruber senior, nowadays the company is one of the world's most important single-source suppliers for piping systems, semi-finished products, concrete protection liners and lining systems made from engineering plastics. Our ability to supply everything from a single source sets us apart. We use only top-grade thermoplastic polymers as our raw materials. When it comes to application-technical consulting, we are your best partner in the field.



## Quality

At AGRU, customer satisfaction comes first. Technical consultations, training courses, welding instruction and expert supervision on site are essential parts. The AGRU quality assurance system is compliant with ISO 9001:2015 and its environmental management system fulfils ISO 14001:2015. This in turn ensures that the products comply with international norms, as monitored and evaluated on an ongoing basis by independent testing agencies standards.

The start-to-finish attention to quality ensures that the products meet and beat the strictest technical specifications, providing safe operation within gas, water and wastewater infrastructures.

# Reliable plant operations for decades

AGRUCHEM industrial piping systems include materials and pipe types for virtually any industrial application. Excellent chemical resistance and an extremely wide temperature application range make our AGRUCHEM industrial piping systems the ideal solution for pipework in plant, equipment and tank construction, and also in the petrochemicals industry.

## Fast and easy installation

### **Pipes, fittings and customized solutions perfectly harmonized**

Our strength lies in more than 50 years of experience and offers you

- carefully thought-out systems optimised down to the finest detail
- unique application technology advice from experts
- easy planning, fast installation and effective logistics

## Maintenance-free pipework

### **Welded joints and materials for high operational reliability**

Efficient and reliable operation of your plant thanks to

- durable and robust system components
- corrosion-free and extremely resilient plastics
- tried-and-trusted AGRUCHEM industrial piping systems

## Double operational safety

### **The compact Poly-Flo double containment piping system is highly reliable**

A media pipe and a protective pipe extruded in a single production step offer

- absolute operational safety thanks to a double containment pipe
- easy installation thanks to time-saving simultaneous welding
- a space-saving design and leakage monitoring of the annular gap

## High media resistance

### **Pipes and fittings made from PE 100-RC/PP/PVDF/ECTFE**

A product range that leaves no wish unfulfilled, including

- customised PE and PP types for special fields of application
- electrically conductive, flame-retardant and chemically resilient materials
- maximum acid and lye resistance



## AGRUCHEM industrial piping systems developed by experts



### PP-H/PP-R industrial piping systems

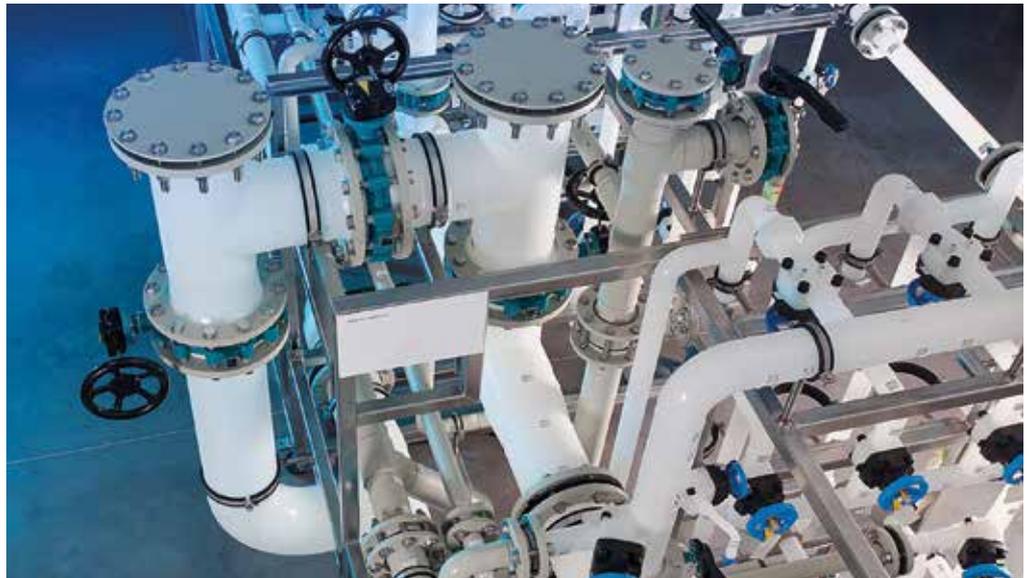
Plastic pipes and fittings made of PP-H and PP-R have proved their value for decades in every area of industry. Above all, excellent temperature and corrosion resistance ensure durability. PP is characterised by its superior strength, stiffness, hardness, and the temperature and chemical resistance these features ensure. PP can be used between -5 °C and +95 °C.

### Electrically conductive: HDPE-ESD-eI / PPS / PPS-ESD-eI

In plastic piping system building, electrically conductive piping must be used in areas with a risk of explosion. Electrically conductive plastics modified by the addition of carbon black guarantee that the known benefits of polyolefins, such as chemical resistance and easy processing and installation, are retained. However, the conductive carbon black does reduce the impact strength and creep strength.

## Fluoroplastic systems

PVDF is a thermoplastic homopolymer with excellent media resistance, a high level of mechanical strength, and maximum purity without additives or stabilisers. ECTFE consists of an alternating arrangement of ethylene and chlorotrifluoroethylene. This makes it the ideal material for applications involving high temperatures and extremely aggressive media. These plastics can be used between -30 °C and +140 °C. Aggressive media such as nitric acid,



sulphuric acid, free chlorine and ozone can be transported safely. The excellent surface quality and abrasion resistance make them ideal materials for use in the petrochemicals industry, life sciences and the food industry.



## Double containment piping systems

The reliable Poly-Flo double containment piping system made of PP or PE is extruded in a single production step. Thanks to its compact design with a small annular gap and low weight, the system can be quickly and reliably installed using simultaneous welding, even in cramped conditions.



## AGRUAIR piping systems for compressed air

AGRUAIR is a compressed-air system for loads of up to 16 bar which is available in outer diameters from 20 mm to 110 mm. Made of PE 100 it is ideal for compressed-air applications. PE 100 remains permanently free of corrosion, is resistant to oils used in compressors, to stress cracks, and impacts, and can be used between - 40° and + 60° Celsius.

PP is ideal for pickling plants, the chemicals industry and also for extremely aggressive sewage, because chemicals at high temperatures are used in these areas.

## PP-H/PP-R - industrial piping systems for high temperatures and chemicals



### Special applications

PP plays an important role in reverse osmosis, which is used in desalination plants. Permanent freedom from corrosion and resistance to salts and minerals, as well as smooth inner surfaces, ensure decades of maintenance-free operation. As high operating pressures are typical in plants of this type, PP – with its high creep strength – is the most popular material.



### Custom parts - tailor-made solutions

AGRU has been known for its unrivalled expertise in custom part manufacturing for decades. Segmented fittings made of PP were used in this project for an industrial ventilation system. PP impresses with its high temperature and chemical resistance here as well.

# Product range AGRUCHEM

## PP-H/PP-R industrial piping systems

### Pipes

PP-H OD 20mm – 1400mm

PP-R OD 20mm – 800mm



### MULTI fittings

SDRs of 17 and 11

OD 20mm – 315mm



### Extended fittings

SDRs of 17 and 11

OD 63/50mm – 315/250mm



### Short-spigot fittings

SDRs of 17 and 11

OD 25/20mm – 315/280mm



### Segmented fittings

SDRs of 17, 26, 33 and 41

OD 560mm – 1200mm



### Socket welding fittings

SDR of 7.4

OD 20mm – 110mm



### Electrofusion welding fittings

OD 20mm – 355mm



### Valves

OD 20mm – 140mm





# Fluoroplastic systems

## Safe transport of highly aggressive media



### ECTFE - the premium class

Ethylene chlorotrifluoroethylene (ECTFE) is a thermoplastic copolymer with an alternating arrangement of ethylene and chlorotrifluoroethylene. For applications involving temperatures between -30 °C and +140 °C or aggressive chemicals (e.g. free chlorine in the medium and 98% sulphuric acid), ECTFE is the ideal solution. The ECTFE piping system is the ready-to-use, highly resistant piping system made by AGRU. For even tougher requirements, AGRU also supplies liner pipes made of FEP and PFA, which possess the highest chemical resistance.



### PVDF - highest product purity

Polyvinylidene fluoride (PVDF) is an ultra-high purity homopolymer without additives. This makes it physiologically safe and suitable for use in ultra-high purity applications. It also offers high mechanical strength and excellent chemical resistance. Just like ECTFE, PVDF is easy to handle and use. It can be used between -20 °C and +120 °C.

# Product range AGRUCHEM

## ECTFE/PVDF industrial piping systems

### Pipes

ECTFE OD 20mm – 200mm  
PVDF OD 16mm – 400mm



### MULTI fittings

ECTFE OD 20mm – 110mm  
PVDF OD 20mm – 225mm



### Fittings

ECTFE OD 63mm – 110mm  
PVDF OD 16mm – 315mm



### Fittings for socket welding

ECTFE  
PVDF



### Valves

ECTFE OD 20mm – 63mm  
PVDF OD 20mm – 140mm



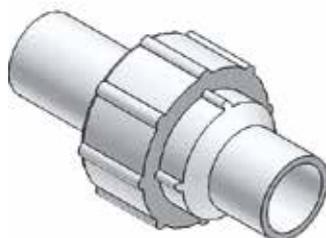
### HPF coupler

PVDF OD 20mm – 63mm



### Union

ECTFE OD 20mm – 63mm  
PVDF OD 20mm – 90mm



### Backing ring

OD 20mm – 630mm





## Double containment piping systems for double safety double safety



### Double containment piping systems

**Poly-Flo** includes piping systems made of PE 100-RC or PP-R for the safe transport of hazardous media. They are easy to install using simultaneous or cascade welding, and both the media pipe and the protective pipe offer full pressure resistance.



**Double containment piping systems** are prefabricated as standard and can be connected using simultaneous butt welding, after spacers have been welded in, or using cascade welding.



# Product range AGRUCHEM double containment piping systems

## Poly-Flo pipe PE 100-RC / PPR

SDR 17/11

Dim. 50/32, 90/63, 160/110

## PE 100-RC / PPR on request

SDR 33/17

Dim. 160/110, 225/160

SDR 17/11

Dim. 225/160



## Poly-Flo fittings injection moulded

PP-R + PE 100-RC

SDR 17/11

Dim. 50/32, 90/63, 160/110



## Poly-Flo fittings segmented

PE 100-RC / PPR

SDR 17/11

Dim. 50/32, 90/63, 160/110

## PE 100-RC / PPR on request

SDR 33/17

Dim. 160/110, 225/160

SDR 17/11

Dim. 225/160



## Poly-Flo measuring fitting turned

PE 100-RC / PPR

SDR 17/11

Dim. 50/32, 90/63, 160/110

## PE 100-RC / PPR on request

SDR 33/17

Dim. 160/110, 225/160

SDR 17/11

Dim. 225/160



## Double containment fitting PP/PP, PE/PE

Simultaneous welding

from dim. 90/32 to 355/250



## Double containment pipe fitting

PE/PVDF, PP/PVDF

Cascade + e-socket welding  
from dim. 90/32 to 280/160





## AGRUAIR Piping system for compressed air



### AGRUAIR - efficient compressed-air transport

The material advantages that PE 100 is known for, such as toughness, flexibility and elongation at break, are ideal for the AGRUAIR compressed-air pipelines and ensure optimal flow conditions. Compressing air also always creates condensation, which causes corrosion or patina inside metal pipes. PE 100 remains completely maintenance and corrosion-free, and even the machine oil from the compressor cannot damage the material. AGRUAIR pipes are insensitive to vibrations as well. Thanks to their flexibility, low weight and very good welding properties, installation is easy and safe.



### Maintenance-free pipework

AGRUAIR are set apart by the fact that they are completely maintenance-free. Thanks to the robustness and flexibility of the plastics, the pipes' smooth interior walls and the complete lack of corrosion, a system typically remains sealed and deposit-free for decades once welded. The plastics PE 100 can fulfil virtually any requirement in the wide temperature range from - 40° to + 60° Celsius. To regulate the bleeding of compressed air, AGRUAIR is equipped with a controllable plastic ball valve.

# AGRUAIR product range

**Pipes**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 110 mm



**Elbow 90°**  
**Transition elbows 45° and 90°**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 110 mm



**Elbow 45°**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 110 mm



**Reducer concentric**  
**AGRUAIR PE 100 blue**  
OD 25/20 mm – OD 110/90 mm



**Flange adaptors**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 110 mm



**Tees normal/reduced**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 110 mm



**Adaptor with metal thread**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 63 mm



**Ball valve**  
**AGRUAIR PE 100 blue**  
OD 20 mm – OD 63 mm



**E-couplers**  
**AGRUAIR PE 100 black**  
OD 20 mm – OD 110 mm





## Electrically conductive customised materials Safe transport of substances with a risk of explosion



### Operational safety is key

An electrostatic charge in the pipework must be prevented when flammable media is being poured in, emptied, stirred, mixed or sprayed. If the pipework is routed through an potentially explosive atmosphere, a single spark discharge can cause an explosion. ESD (electrostatic discharge sensitive) plastics offer additional safety by permanently dissipating electrostatic charges in a controlled manner. They are therefore used in areas where sparks from electrostatic charges need to be prevented due to explosion protection requirements, and are used for piping systems in areas with a potentially explosive atmosphere.



### Easy installation

Both PPS-ESD el and HDPE-ESD el can be butt, socket or heating wire welded. In heated element butt welding, the pipe is able to conduct electricity beyond the joint layer without additional work. The electro-socket welding of electrically conductive pipes using electro-socket fittings made of non-conductive PE is only permissible with electro-socket fittings equipped with embedded heating wires, as low current flows can occur otherwise.

# Product range AGRUCHEM

## PPS-ESD el / HDPE-ESD el

### Pipes

#### PPS-ESD el

OD 32mm – 400mm

#### HDPE-ESD el

OD 32mm – 400mm



### 90° bend

#### PPS – ESD el

OD 32mm – 315mm

#### HDPE-ESD el

OD 125mm – 315mm



### Tee

#### PPS-ESD el

OD 32mm – 315mm

#### HDPE-ESD el

OD 32mm – 315mm



### Reducer concentric

#### PPS-ESD el

OD 63/16mm –

315/225mm

#### HDPE-ESD el

OD 63/16mm –

315/225mm



### Stub flange

#### PPS-ESD el

OD 32mm – 400mm

#### HDPE-ESD el

OD 32mm – 400mm



### Backing ring

#### PPS-ESD el

OD 32mm – 315mm

#### HDPE-ESD el

OD 125mm – 315mm





## References

The AGRUCHEM range of industrial piping systems includes electro-socket fittings, socket welding fittings and butt welding fittings for any application.



AGRUCHEM 90° MULTI bends are available in a variety of materials and complete the AGRU industrial piping system range.

Pipes made of PE offer a variety of industrial application options. Thanks to their high resistance to UV light, they can also be installed outdoors as well as indoors.





The AGRUCHEM Poly-Flo double containment piping system can be joined using time-saving simultaneous welding.



AGRUCHEM pipework made of electrically conductive PE is required in many industrial applications.



PP is also very suitable for reverse osmosis in seawater desalination.



The Plastics Experts.

Your distributor

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