

# AGRULINE

THE USER-FRIENDLY  
AND RELIABLE  
PE 100-RC PIPING SYSTEM



# The Plastics Experts.

The AGRULINE product group offers a complete, high-quality product range of pipes, fittings, valves and customized components made from polyethylene for safe and environmentally friendly supply of gas, potable water and wastewater disposal. Years of experience, a highly knowledgeable staff and state-of-the-art manufacturing equipment are the cornerstones for our high quality products.

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, as well as an occupational safety management system according to ISO 45001:2018. 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 drinking water, wastewater, hydrogen and gas infrastructures. The AGRULINE PE 100-RC product range has been tested by the DBI Gastechnologisches Institut, and certified for hydrogen compatibility up to 100% hydrogen by volume.



# AGRULINE

## Pipes, fittings and customized solutions perfectly harmonised

**AGRULINE involves an ingenious piping system comprised of ultra-robust PE 100 and PE 100-RC materials for safe operation within drinking water, wastewater, hydrogen and gas infrastructures. Decades of product optimisation have turned AGRULINE into a perfect highly cost-effective piping system unlike any other.**

### One stop shopping

#### **Pipes and fittings from one factory for maximum accuracy of fit**

One stop shopping

- all components are designed to fit perfectly with one another
- personal technical consulting is included
- reliable on-time delivery supports your work site logistics
- all components of the system are available between OD 20 mm and OD 3500 mm

### Maintenance free pipework

#### **Homogeneous welding and PE 100-RC ensure operational safety**

Welded PE piping systems are more reliable and durable than push-in connections

- AGRULINE pipework is homogenous, longitudinally force-locked and leak-tight
- the best welding system is selected based on the specific application
- no expensive supports are needed to lay the pipework into the ground
- intact pipelines, still in operation 50 years after installation – a testament to their reliability

### High economic efficiency

#### **Simple assembly, high quality and long service lives**

Saves time and money

- the flexibility of PE often allows for direction changes without fittings
- dimensionally accurate pipes and fittings keep the installation time short
- the investment interval for PE pipes is calculated in terms of several decades
- smooth inner surfaces prevent adhesion and offer perfect flow characteristics

### Certified materials

#### **Raw materials in accordance to PE 100+ Association guidelines**

Outstanding material properties ensure

- high rupture strength
- extreme resistance to slow crack growth
- insensitive to pressure surges and seismic activity

### Outstanding expertise in the field of plastics processing

#### **Decades of on-site experience and R&D**

55 years of experience mean

- flexible, solution-oriented service from knowledgeable employees
- state-of-the-art production machines and processes
- ingenious and well-engineered pipework components
- strong ability to tailor to application through in-house toolmaking
- products certified based on EN 12201 / EN 1555, ISO 4427 / ISO 4437, ÖVGW, DVGW and PAS 1075



## AGRULINE fittings for perfect connections

### AGRULINE fittings from PE 100-RC

**AGRULINE is the piping system with the extensive range of electro-socket fittings, spigot saddles and couplers made of PE 100-RC**

- enormous stress crack resistance thanks to robust PE 100-RC
- no sand embedding required, saving costs during laying
- perfectly harmonised for all AGRULINE pipes
- permanently leak-tight connections through butt, socket or electro-socket welding
- simple assembly of the electro-socket fittings thanks to chamfered inlets and long insertion depths
- simple to weld, even where little space is available or terrain is difficult



## Multi-bends - multi-functional

- stable bends suitable for butt and electro-socket welding
- top flexibility – can be used as a long-spigot or, when cut, as a short-spigot fitting



### PRODUCT RANGE

#### Dimensions

SDR 17	OD 63mm - 315 mm
SDR 11	OD 20mm - 315 mm



## Elongated fittings - improved flexibility when welding

- compatible with butt welding and electro-socket welding for flexibility in applications
- low-stress thanks to optimised gate system



### PRODUCT RANGE

#### Dimensions

SDR 17	OD 63mm - 500 mm
SDR 11	OD 20mm - 500 mm



## Short-spigot fittings - for heated tool butt welded pipelines

- outstanding rupture strength thanks to cutting-edge injection moulding technique
- for pipeline installations with serious space restrictions
- easy to handle on-site thanks to low weight and compact component dimensions



### PRODUCT RANGE

#### Dimensions

SDR 33	OD 110 mm - 500 mm
SDR 17	OD 63 mm - 500 mm*
SDR 11	OD 20 mm - 500 mm*

\*Stub flanges up to OD 710 mm





### Heated tool socket fittings - in small dimensions

- compact fittings for fast connections using heated tool socket welding
- easy to handle, even at limited space conditions
- affordable solution and affordable welding equipment



#### PRODUCT RANGE

##### Dimensions

OD 20 mm - 110 mm



### Sweep bends - low flow resistance

- unimpeded flow of media thanks to smooth inner surface and large radius
- bent but stable pipes - available in many dimensions and angles
- full pressure resistance
- for gas and potable water
- suitable for heated tool butt welding and electro-socket welding



#### PRODUCT RANGE

##### Dimensions

SDR 17 OD 90 mm - 800 mm

SDR 11 OD 90 mm - 800 mm

11°, 22°, 30°, 45°, 60°, 90°

Other SDR levels as well as special angles are possible on request



### FM 1613 approved pipes and fittings - for reliable underground fire protection lines

- FM 1613 approved for top reliability in emergency situations
- corrosion-free, eliminating threat of sprinkler clogging
- subject to 3,2x maximum pressure during certification to ensure top safety



#### PRODUCT RANGE

##### Dimensions

215 psi OD 63 mm - 630 mm

250 psi OD 63 mm - 630 mm

## AGRU SDR 7.4 pipes and fittings - for high-pressure applications

- thick walls can handle water pressure up to 25 bar
- extensive range of products, including injection-moulded fittings
- strong static ratings for maximum safety in practical applications
- fits SDR 7.4 pipes in dimensions from 63 – 500 mm



### PRODUCT RANGE

#### Dimensions

SDR 7.4	OD 63 mm - 500 mm
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## Segmented fittings - also available in special dimensions

- segmented fittings are available in dimensions up to OD 3500 mm and are designed and harmonised to the customer's specific specifications
- solutions with or without de-rating factor for pressure available
- top flexibility, as pieces are produced to meet the customer's requirements
- expert workmanship and strict QA ensure identical performance to standard fittings



### PRODUCT RANGE

#### Dimensions

SDR 41	OD 560 mm - 3500 mm
SDR 33	OD 560 mm - 3500 mm
SDR 26	OD 560 mm - 3500 mm
SDR 21	OD 560 mm - 3000 mm
SDR 17	OD 560 mm - 2500 mm
SDR 11	OD 560 mm - 1600 mm



## Customized fittings - in accordance with your needs

- customized fittings are available in dimensions up to OD 3500
- designed according to customer requirements to ensure a perfect fit
- reduced overall costs through perfect integration in any construction plans
- pressure-rated versions available by request



### PRODUCT RANGE

#### Dimensions

Available in various pressure ratings up to OD 3500 mm, by request





# AGRULINE fittings for electro-socket welding

## Electro-socket fittings - injection moulded

- extensive product range from PE 100-RC
- perfect welding results through fully embedded heating wire
- Easy cleaning and gentle heat distribution
- can be welded using universal welding equipment, even where little space is available or terrain is difficult
- automated production processes with barcode and resistance check ensures origin of components can be traced at all times
- removable centre guide, ideal for repair applications
- E-couplers in SDR 11 up to OD 315 tested and approved for maximum operating pressures of up to 25 bar



### PRODUCT RANGE

#### Dimensions

SDR 17	OD 90 mm - 500 mm
SDR 11	OD 20 mm - 500 mm
Adaptor fittings: SDR 11	20 x 1/2 - 63 x 2



## Machined E-couplers

- in dimensions from 560 – 1400 mm
- maximum safety thanks to completely embedded heating wire
- bifilar welding system allows the E-coupler to be welded to the pipe outside the trench
- available in SDR 11, 17 and 26
- Ideal for pipe bonding and connecting of pre-cast pipe runs
- can be welded with pipe walls of thicknesses SDR 41 to SDR 11 (depending on dimensions)



### PRODUCT RANGE

#### Machined E-couplers

SDR 11	OD 560 mm - 900 mm
SDR 17	OD 560 mm - 1400 mm
SDR 26	OD 560 mm - 1600 mm



## Application E-couplers

Machined E-couples from AGRU offer decisive benefits. They are produced from PE 100-RC, a crack-resistant material, and contain a bifilar welding system that allows for them to be welded on the pipe outside the narrow confines of the trench.





## AGRULINE saddles and valves

### Spigot saddles - an affordable alternative for branches

affordable solution for installation of branches on main lines

- installation of pressurised branches possible using special tool
- injection-moulded version up to Dim 355 mm
- machined version from 355 - 3500 mm
- simplified installation of the „Topload“ system through specially engineered clamping system



#### SPIGOT SADDLES INJECTION-MOULDED

Dim of main [mm]	Dim of spigots [mm]
90	20, 32, 40, 63
110	20, 32, 40, 63
125	20, 32, 40, 63
160	32, 40, 50, 63, 90, 110
180	32, 40, 50, 63, 90, 110
225	32, 40, 50, 63, 90, 110
250	63, 90, 110
280	50, 63, 90, 110
315	63, 90, 110
355	63, 90, 110

#### SYSTEM TOPLOAD, MACHINED

Dim of main [mm]	Dim of spigots [mm]
355 - 1400	90, 110, 125, 160, 180, 200, 225
450 - 1400	250, 280
450 - 2500	315
710 - 2500	355, 400, 450, 500
1600 - 3500	560, 630, 710, 800, 900, 1400

Other dimensions on request

# Hot-Tapping - tapping under pressure

## Tapping saddles - creating branches by hot tapping

Creating branches (e.g. house connections) on main pipes during operation

- quick and easy installation through mounting belt
- gas-tight through patented telescoping tapping system
- clean, leak-tight tapping without chips or residues
- extra long spigots for 2x electrofusion
- tapping system allows pressure test
- to be combined with a gas flow guard



### TAPPING SADDLES

Dimension of main [mm]	Dimension of spigots [mm]
40	20, 25, 32
63	20, 25, 32, 40, 63
90	25, 32, 40, 63
110	20, 25, 32, 40, 63
125	20, 25, 32, 40, 63
160	20, 25, 32, 40, 63
180	25, 32, 63
200	20, 25, 32, 40, 63
225	25, 32, 63
250	32, 63
315	63

## Pressure tapping valves - creating branches by hot tapping with valve function

Creating branches (e.g. house connections) on main pipes during operation with integrated valve function

- rapid opening and closing with maximum 10.5 rotations
- reduced flow loss thanks to optimised component design
- enduring quality thanks to PE 100-RC material and integrated valve components made of lead-free brass and stainless steel
- extra long spigots for 2x electrofusion



### PRESSURE TAPPING VALVES

Dimension of main [mm]	Dimension of spigots [mm]
63	32, 40, 50, 63
90	32, 40, 50, 63
110	32, 40, 50, 63
125	32, 40, 50, 63
160	32, 40, 50, 63
180	32, 40, 50, 63
225	32, 40, 50, 63
250, 280, 315, 355	63

## Stop-Off-Saddle - Shutting off PE gas pipeline sections

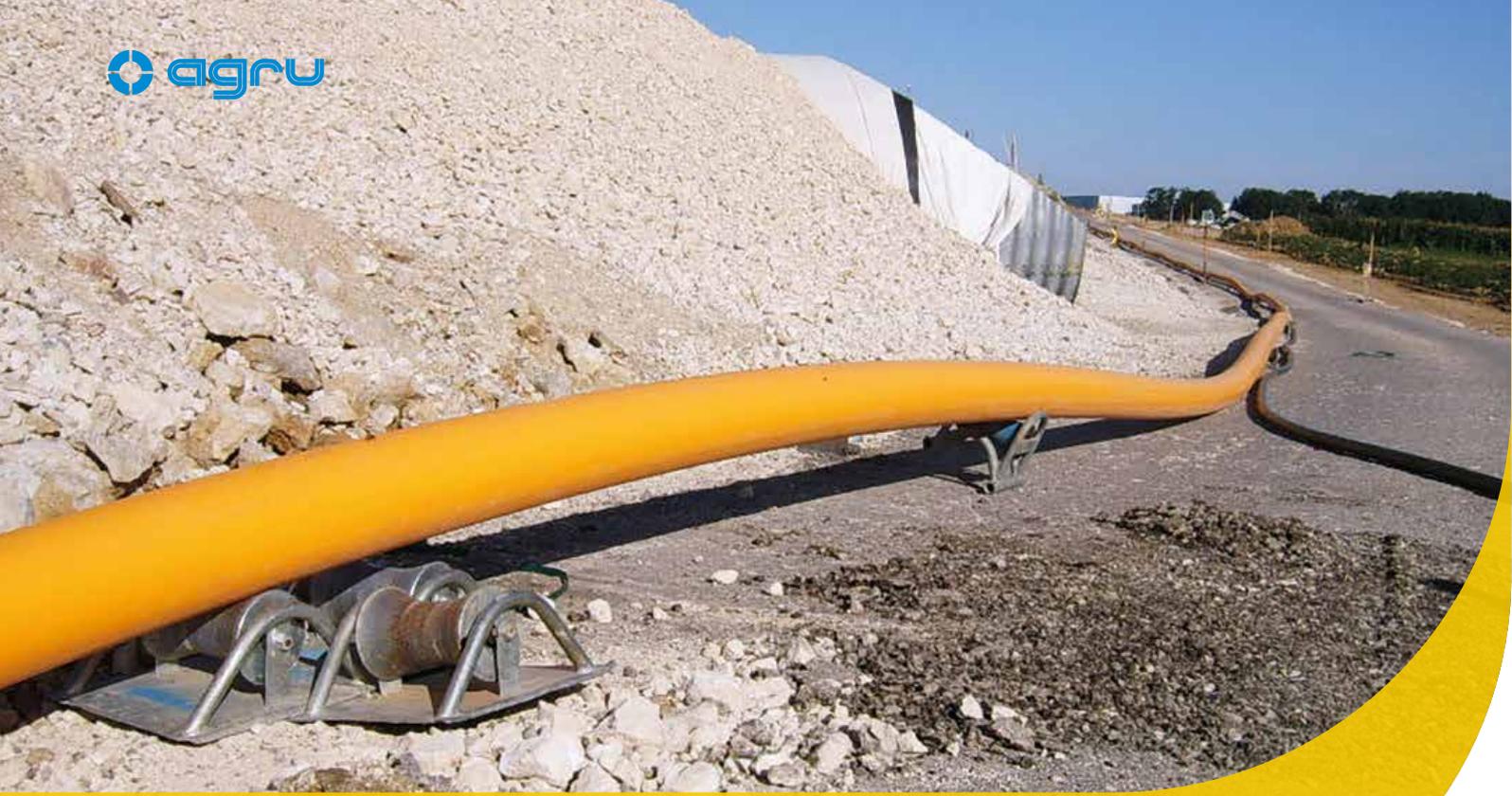
Stop-Off-Saddle is used wherever damage to gas pipes must be repaired quickly and when there are no valves to shut off.

- fully embedded heating coil - easy to clean welding surfaces, protection against corrosion, even and gentle heat distribution in the welding zone
- high quality material PE 100-RC - highest resistance to slow crack growth, cost savings by omitting the sand bed
- special construction features - quick installation with fixation straps and screws and little need for space
- guaranteed traceability of each component - due to continuous serial number and traceability code



### STOP-OFF-SADDLE

Dimension of main [mm]	Dimension of spigots [mm]
90 mm	2 1/2"
110 mm	2 1/2"
125 mm	2 1/2"
160 mm	2 1/2"
200 mm	2 1/2"
225 mm	2 1/2"
315 mm	2 1/2"



## Sureline pipes I - II



### Sureline I pipes - the reliable classic

- PE 100-RC pipes for potable water and wastewater
- pipes are black or with coloured stripes running axially for clear identification of the application area
- flexible and light, ensuring broad range of applications
- strong resistance to point loads and slow crack growth for top safety during installation and operations
- no sand embedding required, translating into high potential savings through reducing construction costs
- suitable for alternative trenchless laying methods, such as milling, ploughing, relining, sublining, swagelining, horizontal directional drilling and soil displacement hammer



#### PRODUCT RANGE

##### Dimensions

SDR 17	OD 63 mm - 1000 mm
SDR 11	OD 20 mm - 1000 mm

## Sureline II pipes - for top safety

- PE 100-RC pipes for potable water, gas and wastewater
- clear labelling of application through coloured signal layer
- flexible and light, ensuring broad range of applications
- strong resistance to point loads and slow crack growth for top safety during installation and operations
- no sand embedding required, translating into high potential savings through reducing construction costs
- suitable for alternative trenchless laying methods, such as milling, ploughing, relining, sublining, swagelining, horizontal directional drilling and soil displacement hammer



### PRODUCT RANGE

#### Dimensions for water, wastewater

SDR 17 / SDR 11	OD 75 mm - 1200 mm
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#### Dimensions for gas

SDR 17 / SDR 11	OD 75 mm - 400 mm
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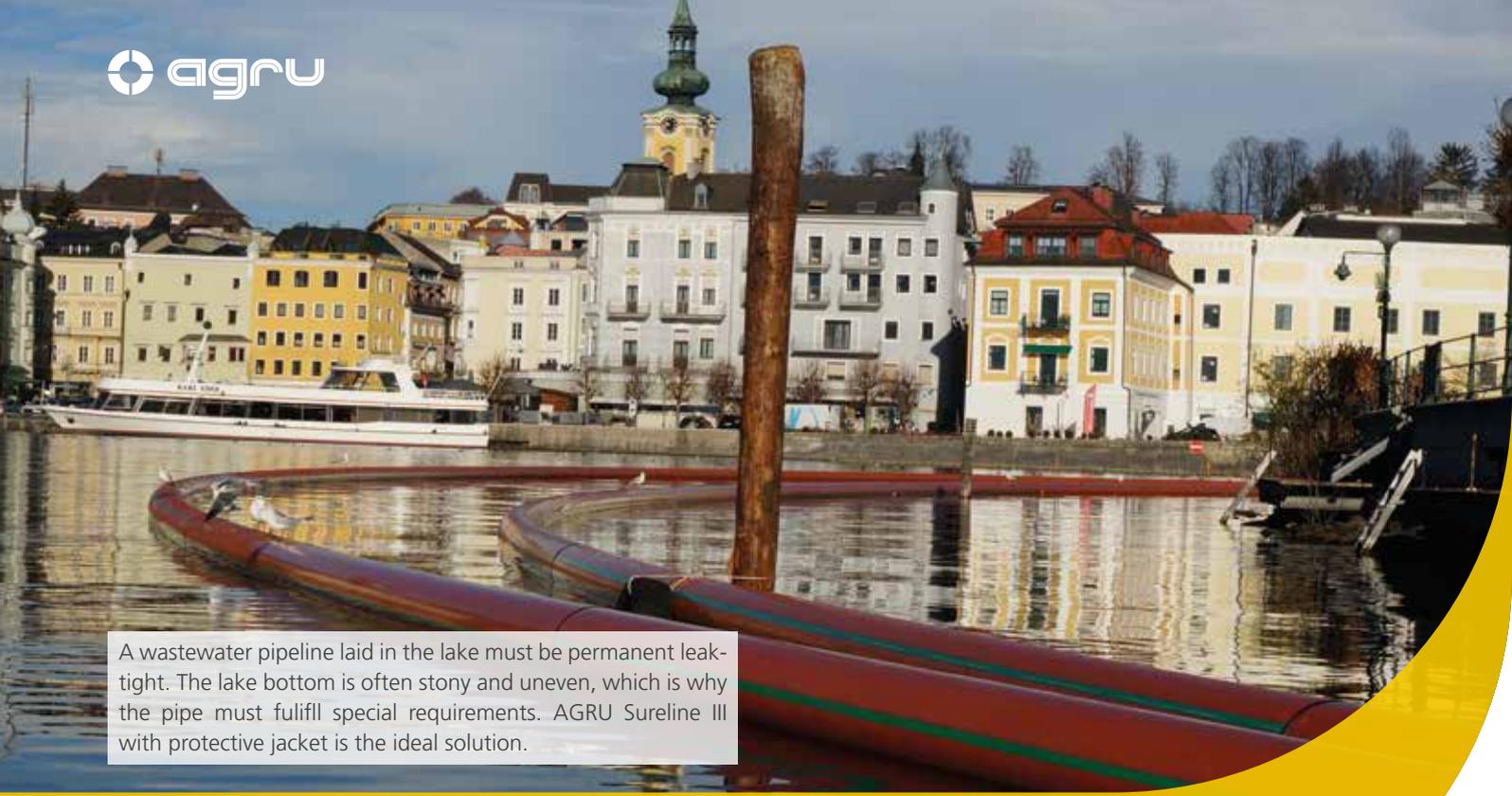


## APPLICATIONS SURELINE II PIPES

Lower construction costs thanks to flexible laying options, including alternative methods without sand embedding - saving money on fittings on direction changes.

The coloured signal layer denotes the application - here a potable water line.





A wastewater pipeline laid in the lake must be permanent leak-tight. The lake bottom is often stony and uneven, which is why the pipe must fulfill special requirements. AGRU Sureline III with protective jacket is the ideal solution.

## Sureline III pipes with protective layer



### Sureline III pipes with protective layer - twice the safety

- PE 100-RC inner pipe with additional protective layer of PP
- twice the safety for extreme applications such as pipe bursting or horizontal directional drilling on stony soils
- scratch-proof PP protective layer prevents significant damage to inner lining during installation and improves operational reliability
- rapid heated tool butt welding thanks to factory-stripped ends



#### PRODUCT RANGE

##### Dimensions for gas: orange protective layer

SDR 17 / SDR 11	OD 63 mm - 225 mm*
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##### Dimensions for potable water: blue protective layer

SDR 17 / SDR 11	OD 63 mm - 1200 mm
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##### Dimensions for wastewater: brown protective layer

SDR 17 / SDR 11	OD 63 mm - 1200 mm
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### Sureline III with protective layer, for the new installation

Extension of a water supply network and construction / connection of a high tank. Trench installation as well as horizontal directional drilling of 3 sections underneath a highway. The project costs could thus be reduced immensely, since the traffic on the highway could be continued unhindered. The contractor also decided to install in the trench the Sureline III pipe in order to get the benefit of this „double safety“ for the complete piping system.



### Sureline III with protective layer for pipe reconditioning

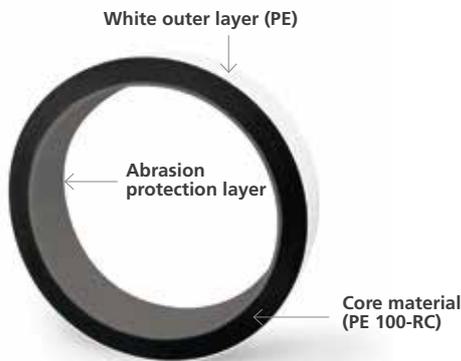
Reconditioning of old, damaged potable water line made of asbestos cement using pipe bursting. Insertion of multiple sections of up to 175 m in length. Expansion of the existing pipe dimension from OD 150 to OD 160 mm. Traffic could continue to flow.

During pipe bursting, the pipe is subjected to particularly high loads. Stones in the ground as well as the cracked old pipe scratch the pipe surface. The additional scratch-resistant PP protective layer is the ideal solution, it absorbs the damage and thus ensures that an impeccable new media-carrying pipe can be put into operation.





# MINELINE I and II Abrasion-resistant piping systems



## MINELINE II, the three-layer system

MINELINE II pipework has a longer service life due to the abrasion-resistant inner layer in the pipes and fittings. All MINELINE piping systems benefit from the albedo effect. Their white surface reflects a large part of the solar energy, the freely laid pipeline heats up less and the thermal expansion in length is reduced to a minimum.

The core layer made of PE 100 (-RC) and the substantially greater wall thickness of the innovative three-layer structure guarantee high operating reliability.

MINELINE I has a white outer layer, but does not have an additional inner layer.

## Guaranteed safety

In addition to the safe three-layer structure, MINELINE II can be connected using a combination of butt and electro-socket welding. This helps to avoid potential weak points and protects the inner pipe against abrasion.



Heated element butt welding

E-socket welding

Combined welding

# Product range AGRULINE MINELINE I and MINELINE II

## MINELINE

### Pipe 5m

PE 100-RC  
white signal-layer  
and abrasion-layer  
extruded



## MINELINE

### Tee

PE 100-RC  
weiße Signalschicht  
und Abrasionslayer  
segmented



## MINELINE

### Bends

PE 100-RC  
white signal-layer  
and abrasion-layer  
segmented



## MINELINE

### Stub flange

PE 100-RC  
white signal-layer  
and abrasion-layer  
machined



## MINELINE

### Sweep bends

PE 100-RC  
white signal-layer  
and abrasion-layer  
formed out of pipe

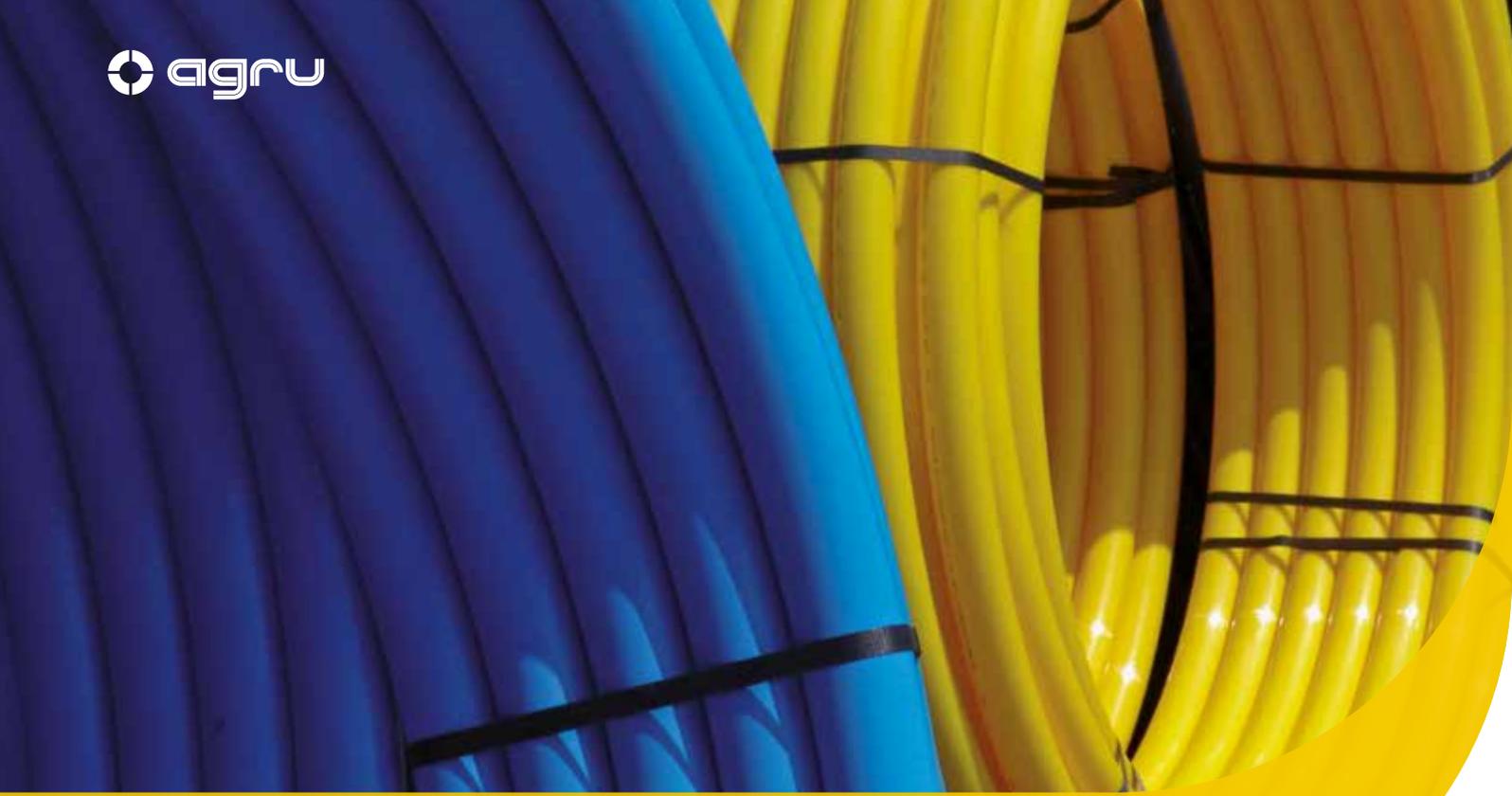


## MINELINE PIPING SYSTEM

### Dimensionen

SDR 17	OD 160mm - OD 1200mm
SDR 11	OD 63mm - OD 1200mm

Not in stock. Fittings on request.



# SurePEX and Surefit

## SurePEX pipes - top safety

- impact insensitive pipes from crosslinked polyethylene (PE-Xa)
- extremely flexible, even at low temperatures
- uncompromising quality for top safety at temperatures ranging from - 50 °C to + 95 °C
- the outstanding stress crack resistance ensures permanent leak-tight house connections
- also ideal for hot water lines, district heating and geothermal heating in the sanitary and industrial fields



### PRODUCT RANGE

#### Dimensions

SDR 11	OD 25 mm - 125 mm*
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## AGRU Surefit - Relining without annular gap

- diameter reduction through factory-side pipe preparation
- rapid, affordable laying using winch dragging
- pressure and steam are applied, with „memory effect“ causing pipe to resume its previous round shape
- perfect flow characteristics and full pressure resistance
- interior diameter reduced through relining is compensated through outstanding flow characteristics



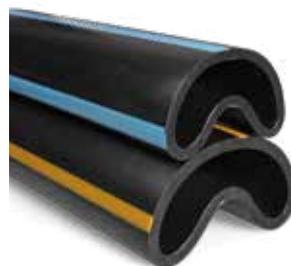
### PRODUCT RANGE

#### Dimensions for gas and potable water

SDR 17	OD 200 mm - 400 mm
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#### Dimensions for wastewater

SDR 26	OD 150 mm - 400 mm
SDR 32	OD 350 mm - 400 mm





## Sewer rehabilitation with pre-formed PE pipes

Pipes with a diameter over 400 mm can be deformed on site and pulled into the old pipe.



# AGRULINE Flange connections

## Backing ring and blind flange

Flange connections are primarily needed for material transitions, integrating valves and separable connections. Backing rings and stub flange are used to create leakproof but separable connections between AGRULINE piping systems. Blind flanges are used as covers at the end of a pipeline.

The contact pressure of the circular sealing surfaces on the seal between them is crucial for ensuring the joint is leakproof. The pressure is built up by screws inserted through holes drilled in the backing ring/blind flanges. The drilling pattern is laid down by various standards (PN in the DIN standard and Class in the ANSI standard).

The benefits of AGRULINE backing ring and blind flanges:

- steel core encapsulated in glass-fibre-reinforced PP
- very stiff and therefore dimensionally stable and permanently leakproof
- corrosion-resistant and thus maintenance-free
- it is easy to create transitions to other materials
- suitable for integrating valves
- designs comply with EN 1092 (PN 10 or PN 16) and ASME B 16.5 (class 150)



### PRODUCT RANGE

#### Backing ring DIN

PN 10	OD 20 mm - 630 mm
PN 16	OD 20 mm - 400 mm

#### Blind flange DIN

PN 10	OD 20 mm - 400 mm
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#### Backing ring ANSI

class 150	OD 20 mm - 630 mm
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#### Blind flange ANSI

class 150	OD 20 mm - 315 mm
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Separable flange connections facilitate maintenance work.

## Full-faced flange

AGRULINE Full-faced flanges are often used for connecting hydrants or water tanks to water pipes. They offer the best possible connection between metallic components and PE pipelines.

The benefits:

- separable flange joint
- drilled as per PN 10 (in line with DIN 2501)
- suitable for potable water
- long arms for heating wire or heated element butt welding
- easy installation without loose parts. Assembly aid (the drill holes are numbered for tightening the screws)
- injection-moulded reinforcement ribs



### PRODUCT RANGE

#### Full-faced flange

PN 10/16

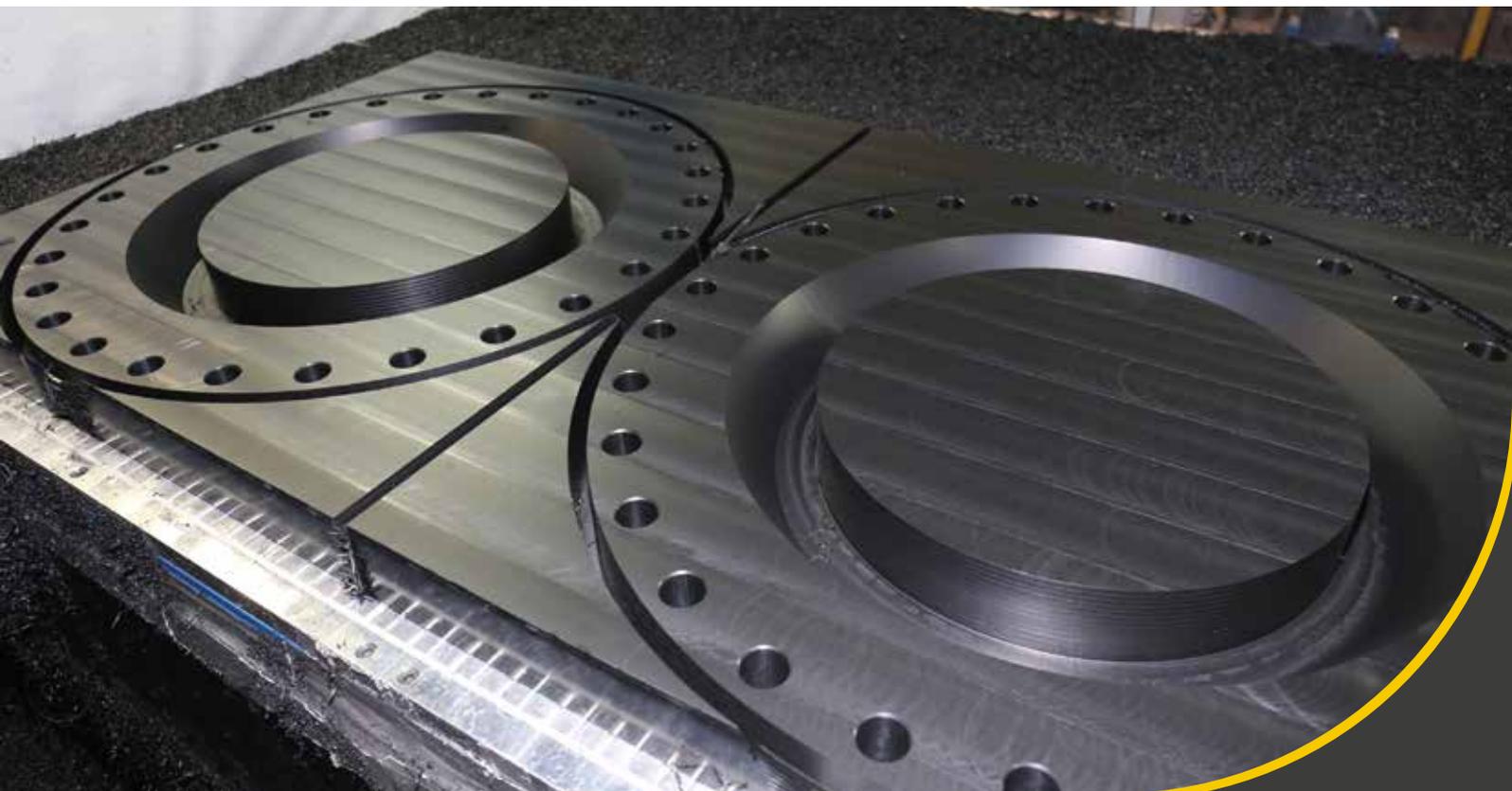
OD 90 mm - 180 mm



Full-faced flanges are often used to connect metallic components and PE pipelines.

## SPECIAL DIMENSIONS

AGRU is happy to mechanically produce flanges for special projects in virtually any dimension. The image shows the machining of custom-made flanges from a PE 100-RC panel.





# AGRULINE

## Concrete connection socket

### Concrete connection socket

AGRULINE concrete connection sockets ensure that PE pipes in shafts and walls are fed through and anchored in a manner that is watertight and safe. This is how pipes are safely installed in buildings or shafts and connected to one another.

The AGRULINE concrete connection socket, which is made of the high-quality material PE 100-RC, can be used to create a welded, tension-resistant joint thanks to its integrated heating wires. The heating wires ensure that the energy is applied gently. All AGRU concrete connection sockets come with an EPDM puddle flange.

The concrete connection socket has many benefits:

- made from the crack-resistant material PE 100-RC
- EPDM puddle flange ensures connections are permanently leakproof
- optimised anchoring in concrete thanks to a prefabricated groove
- electro-socket welding with PE pipes
- suitable for SDR levels between 33 and 11
- root penetration not possible



#### PRODUCT RANGE

##### Concrete connection socket

SDR 11 - SDR 33

OD 160 mm - 560 mm



The concrete connection socket is mounted flush with the formwork and grouted in with concrete. A prefabricated groove guarantees safe anchoring and the puddle flange acts as a seal.

## Concrete connection socket type 2

This type does not have integrated heating wires like the concrete connection socket, but has an external electro-socket fitting. The benefits of a typical concrete connection socket, such as protection of potable water and groundwater, are combined with even more flexible installation. The constructional separation of the concrete connection socket and the electro-socket fitting increases the range of applications the sleeve can be used for and prevents the heating wire from being soiled when the concrete is being poured in. There is also another benefit: AGRUSAFE concrete protection plates can be homogeneously welded with the concrete connection socket on the face side.



### PRODUCT RANGE

#### Concrete connection socket type 2

SDR 11

OD 110 mm - 400 mm



The concrete connection socket type 2 has an external electro-socket fitting.

### WELDING

Integrated heating wires in the Concrete connection socket ensure heat is applied to the pipe and fitting gently. The shaft and piping system are connected by a joint that is leakproof and cannot be pulled out.





Photo: Hydrokarst Swiss

## References

AGRU supplied suitable piping for lake water utilization (heating and cooling) made of PE 100-RC.



For the construction of a large-dimensioned, two-tube culvert under the Spree River, two large-diameter PE pipelines of OD 1400 mm and OD 1200 mm were laid without trenching.



AGRU Kunststofftechnik supplied several hundred meters of PE 100-RC pipes in outside diameters between OD 560 mm and OD 710 mm for a new district cooling center in Vienna.



Sand bed free installation in alpine terrain of pipes and pipe bends made of PE 100-RC. The pipeline had to be suitable for a pressure of 10 bar. All components were transported by helicopter.

AGRU Kunststofftechnik supplied a water pressure pipeline which was installed in the lake. All components were made of the stress crack resistant high-tech plastic PE 100-RC.





The Plastics Experts.

Your distributor

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