

# AGRULINE 24-63" Pipes

ROBUST, LONG-TERM  
PIPING SOLUTION FOR  
MUNICIPAL, INDUSTRIAL,  
AND AQUACULTURE  
APPLICATIONS





# The Plastics Experts.

AGRULINE offers a complete range of high-quality pipes and fittings. AGRULINE products are used to create and rehabilitate critical infrastructure for the reliable transport of gas, potable water, process water, and wastewater. As with all AGRU solutions, AGRULINE products are produced with years of experience, a highly knowledgeable staff, and state-of-the-art manufacturing equipment.

The AGRU success story has been unfolding for over seven decades. Founded in 1948 by Alois Gruber Sr., the company has grown to become 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 the highest-grade thermoplastic polymers as our raw materials and, when it comes to application-technical consulting, AGRU is your best partner.



## Quality

At AGRU, customer satisfaction and an uncompromising commitment to quality are paramount. Our state-of-the-art ISO9001, ISO14001, and ISO45001 registered production facilities in South Carolina combined with technical support, training courses, welding instruction, and project consultation are an integral part of our product and service offering. Our start-to-finish attention to quality and details ensure that our products meet or exceed the strictest technical specifications, providing safe operation within gas, water, and wastewater infrastructures.



# AGRULINE 24-63” Benefits

AGRU produces AGRULINE 24–63” pipes in its cutting-edge production facility in Charleston, SC, using a polyethylene (PE) 4710 resin that exceeds the ASTM D3350 standard. PE 4710 allows AGRU to manufacture exceptionally durable pipes that are resistant to corrosion and flexible enough to support various installation methods such as horizontal directional drilling. AGRULINE 24–63” pipes are a robust, long-term solution for municipal, industrial, and aquaculture applications.

AGRULINE is the industry-leading HDPE piping solution available in North America at the 24–63” OD range. These pipes are extruded rather than spiral wound, meeting international standards such as EN 12201 and ISO 4427. AGRU collaborates with partners to be a one-stop solution for pipes and fittings in this size category.

## AGRU: The Plastics Experts

- Outstanding expertise in the field of plastics processing
- Superior customer service during the order fulfillment process
- Flexible, solution-oriented service and technical support before, during and after project design, execution, and while in operation
- Modern production machines and processes
- Machined and molded engineered piping components.

## Low-Maintenance Piping Systems

- Welded HDPE piping systems are considered “leak-free” and homogenous in nature when compared with other joining methods required by other alternative legacy materials such as ductile iron, steel, and concrete
- The AGRULINE piping system is proven with decades of in-service pipelines worldwide
- 100+ year design life (1).

## Efficient Solutions

- One-stop shopping for pipes, fittings, and other accessories as needed
- Easy to install and maintain
- Supports a variety of installation methods including horizontal directional drilling
- Smooth inner surfaces ensure high flow capacity throughout the system’s service life.

## Certified Materials

- PE 100, PE 100-RC, and PE 4710 certified materials all listed in PPI’s TR-4 listing
- Suitable for high pressure applications
- Non-corrosive with high chemical resistance
- For higher resistance to slow crack growth, and the longest life, request products made from PE 100-RC.



## Steel vs PE

The only other material used as extensively as steel in water supply systems is PE (2), which will take over as the material of choice, primarily due to our growing understanding of corrosion and its effects on piping system performance. Case studies have shown that large corrosion patches, rather than small pits, are the primary cause of failure. Implementing measures to prevent corrosion or using materials that resist corrosion is essential for creating long-lasting and efficient water supply systems (3).

New pipes typically start with a high roughness coefficient, which is material-specific and used in the Hazen Williams equation for water flow. That coefficient decreases with time as the pipe deteriorates with age. Several processes can cause this, but the most typical one is tuberculation. Pipes will tuberculate as pitting corrosion products buildup. With time, the flow rate decreases. Steel pipes can be affected by tuberculation, with their roughness coefficient decreasing by more than half in about 50 years. PE 100 pipes are unaffected throughout their service life (4).

Beyond corrosion, pipes and fittings made with PE 100 offer high resistance to seismic activity and are easy to install thanks to their flexibility. Furthermore, PE 100 is among the few materials that can be fusion welded to create leak-free joints. A leak-free pipe can help address problems typically associated with water supply systems, such as infiltration and exfiltration.

Due to its robustness and excellent service history, industries with a mission-critical need for sustained water supply have become early adopters of PE 100. For example, nuclear power plants in the United States have been using PE 100 instead of steel for safety-related piping systems. Steel pipes in these applications coincide with high costs due to the operational cost of shutting down the plant for maintenance. Power plants have transitioned to PE 100 as an alternative to steel pipes to save millions every year in repairs.





## Specifications

AGRULINE 24–63" pipes offer exceptional long-term hydraulic properties, reduced operational costs, and 100+ year service life. Pipes are available from standard dimensional ratio (SDR) 7.4 to SDR 32.5 and meet PE 4710 and ASTM standards. AGRU is one of the only companies offering 63" SDR 11 HDPE pipes in North America.

Pipes can be configured with colored stripes (Blue, Green, Yellow) and cut to customized lay lengths to meet project requirements. Additionally, AGRU supplies fittings made with the same materials for homogenous seals.

AGRU makes all pipes and fittings in an ISO-compliant manufacturing facility. Engineer services are available on request to help meet project-specific requirements.

## Installation Methods

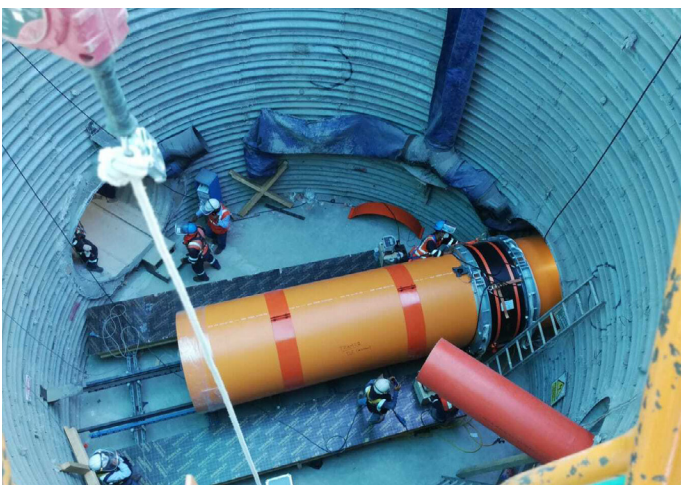
AGRULINE 24–63" pipes support most installation methods, including horizontal directional drilling (HDD). HDD enables precise borings with shallow arcs that bypass subterranean obstacles like other pipes or riverbeds (5). Pipes made of PE complement the HDD method well thanks to its high strength, flexibility, superior joint integrity, low weight, and long-term service life, representing improved cost-effectiveness over competing materials.

AGRULINE supports most projects' pressure, service loads, and pullback loads. AGRULINE pipes made with PE 100-RC meet all the technical load requirements and are approved by PAS 1075 for trenchless laying techniques.



## Complete Solution

Achieve more with AGRULINE's complete solution including the world's first 63" HDPE electrofusion couplers, tooling, electrofusion machines, training, and engineering support. AGRU offers project support with installation guidelines, datasheets, tools, quality control procedures for welding, and welding procedures.





## Case Studies

### AGRU HDPE pipe used to support trunk sewer upgrades at Three Mile Creek

#### Context

In 2018, Mobile, Alabama, began a project to upgrade an existing 36" and 42" trunk sewer into a new 11,000 ft, 60" diameter gravity trunk sewer main. The upgrade would involve a segment of the pipe that starts on the south side of Three Mile Creek before crossing over ending at a Severe Weather Attenuation Tank. The upgrade was essential to provide the needed transmission and storage capacity to reduce the occurrence of sanitary sewer overflows during rain events.

#### Opportunities

The proposed upgrades posed design challenges due to the size of the pipe and structures. Additionally, project site constraints limited the length of installed pipe and reduced the available working space.

#### Solutions

To overcome installation constraints, engineers utilized two sizes of AGRU HDPE pipe, which provided enough flexibility to allow the contractor to complete the installation while also managing the site constraints. HDD was the installation method.

Additionally, because the existing pipe segments had a limited diameter, the engineer designed a solution that utilized sections of 48" and 63" diameter pipes in SDR 11. AGRU was the only manufacturer that could provide products that met this requirement.

#### Outcome

The contractor successfully installed the pipes. Furthermore, the engineering team's choice of piping product and installation approach has provided time savings as the alternative would have been tunneling under the creek. Once completed, this project will become the largest diameter HDPE HDD project in North America.

# AGRU HDPE pipe used to help to create a new sewer main for Fort Lauderdale

## Context

In 2020, the City Commission of Ft. Lauderdale, Florida, approved a \$65 million fund to design and construct a 7.5-mile-long pipe that will serve as a redundant wastewater transmission line. The extended line would start from Coral Ridge Country Club Wastewater Lift Station and end at the G. T. Lohmeyer Wastewater Treatment Plant (GTL), providing improved infrastructure with redundancy, enhanced reliability, and enhanced services.

## Opportunities

One challenge with the project was that sections of the 7.5-mile-long pipe extension run near or along streets, roadways, and residential zones and neighborhoods. Engineers had to choose a piping material capable of installing with HDD to minimize the impact on surrounding areas.

## Solutions

To overcome installation constraints, engineers chose to use HDPE sewer pipes. In addition to being flexible and durable enough to support HDD, HDPE pipes are more resistant to corrosion. They have fewer mechanical joints, which together help reduce long-term maintenance requirements. The piping system also improves the infrastructure's resilience to rising sea levels and groundwater tables.

Murphy Pipeline Contractors and David Mancini & Sons worked simultaneously to fast-track construction. Murphy Pipeline handled the northern portion, with David Mancini & Sons taking the southern part.

## Outcome

The new force main was completed without issue and set a record for one of the world's longest and largest HDD pressurized sewer pipe installations, at 3,100 ft at OD 54. The installation required fusing about 23 sections of pipe.





# Applications

## Wastewater

Common problems with wastewater infrastructure include inflow and infiltration (I&I) and corrosion. These problems are associated with the following issues:

- Higher variable operating costs—a leaky system will cost more to manage since I&I results in unnecessary additional treatment costs.
- Lower utilization and decreased life of existing facilities—leaks and microbial-induced corrosion (MIC) can reduce the service life of concrete structures.
- Environmental safety—wastewater can harm local ecology.

Only about 8,674 of America's 51,356 community water systems receive sufficient funding, compounding the wastewater infrastructure problem. The other 83%, which serves about 8% of the U.S. population, often lacks the budget or technical capacity to meet U.S. Safe Drinking Water Act standards (6).

Fortunately, the right combination of products in specific wastewater systems enables long-term solutions that prevent issues like MIC and help significantly reduce the maintenance required to support the system. Components in wastewater systems can benefit from being made with HDPE pipes and fittings, which solves issues with corrosion and leaking. Thus, smaller water systems can maintain Safe Drinking Water Act standards.

**AGRULINE 24–63" pipes enable the creation of wastewater systems that last longer, demonstrate lower operating costs, and feature improved safety.**

Visit us online at <https://agruamerica.com/application/water-wastewater/> for more information about how to enhance wastewater applications with AGRU solutions.



## Water Transmission

Common problems with water infrastructure include exfiltration from leaking pipes or pipe joints and inadequate storage. These problems are associated with the following issues:

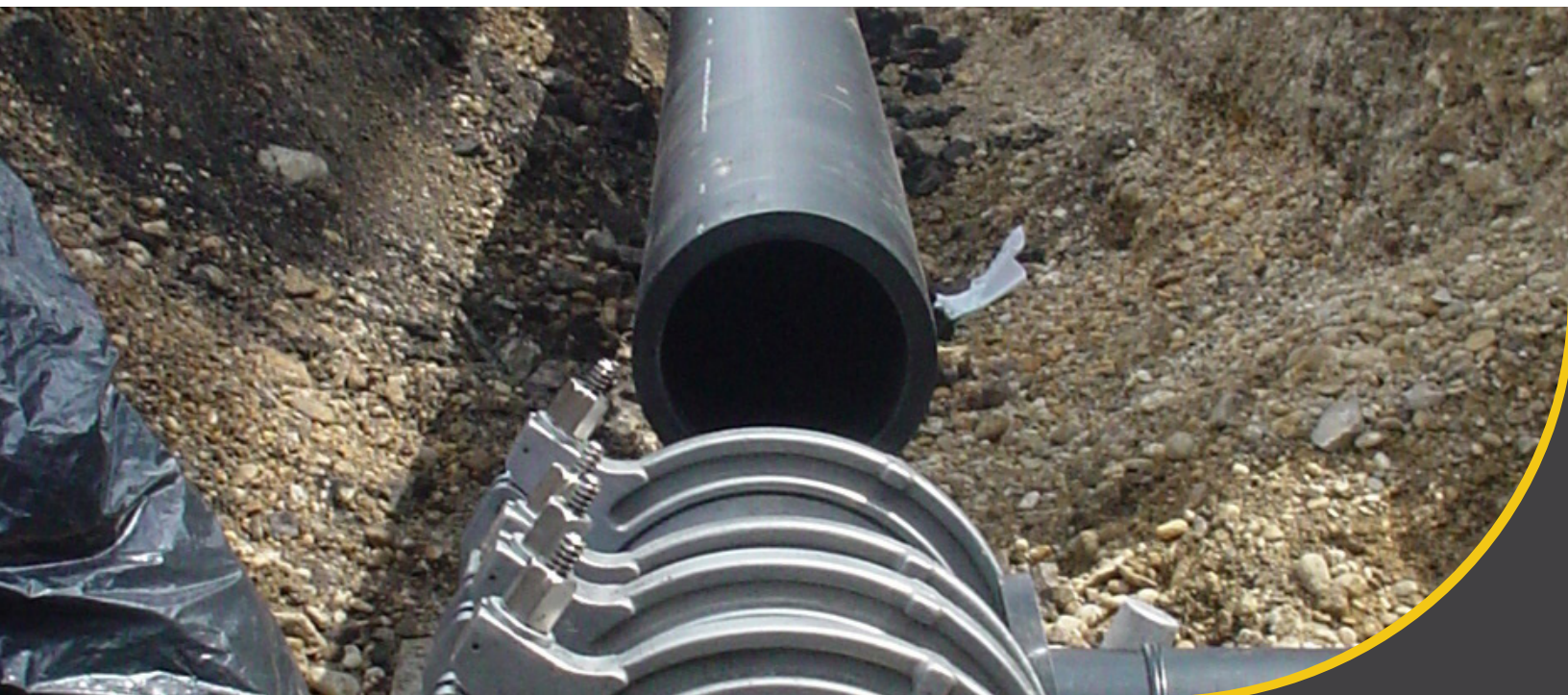
- Higher variable operating costs—a leaky system will waste critical water resources and cost more to manage.
- Lower utilization and decreased life of existing facilities—leaks can reduce the service life of treatment and conveyance systems by requiring system expansions that would not otherwise be required.
- Poor drought or emergency preparedness—ineffective potable water and reservoir storage facilities limit access to water throughout shortages or emergencies.
- Poor reliability and low margins of safe and dependable yields—inadequate storage and leaky pipes will lower the overall reliability of the water infrastructure.

Unlike other pipes and fittings made with traditional materials like concrete, HDPE pipes and fittings are weldable to create joints with no leakage. Pipes made with HDPE are lightweight and flexible, facilitating installation methods such as HDD and transport options such as ocean towing. HDPE pipes can reach XXL dimensions of 3,500 mm in outer diameter and 600 m in length.

HDPE pipes' durability improves as their size increases, and these pipes have shown high resistance to seismic forces. Seismic resistance is significant for pipes buried deep underground in regions known to experience earthquakes. In one case study of the Kobe 1995 earthquake, while all other pipes in the city's infrastructure showed at least one failure every four miles of pipe, HDPE pipes demonstrated zero failures across the entire system (7).

**AGRULINE 24–63" pipes enable the creation of water transmission systems that last longer, demonstrate lower operating costs, and feature improved reliability.**

Visit us online at <https://agruamerica.com/application/water-wastewater/> for more information about how to enhance water transmission applications with AGRU solutions.



## Aquaculture

Common problems associated with aquaculture infrastructure include a need to enhance durability and chemical resistance (sea-based containment) and growing costs to the bottom line due to inadequate concrete protection and leaking pipes/pipe joints (land-based containment).

AGRU Sea-Based Aquaculture Solutions address durability and operational costs to:

- Improve reliability and margins of safe and dependable yields by preventing biological growth or corrosion on containment walls (containment approach).
- Help ensure fish stock does not escape, which can be a significant setback as the fish farm would need to start over.
- Prevent nonnative fish stock from escaping into waters and incurring high retrieval costs (8).

AGRU Land-Based Aquaculture Solutions address maintenance and operational costs to:


- Improve reliability and margins of safe and dependable yields by preventing biological growth or corrosion on containment walls.
- Reduce variable operating costs by preventing leaks in the piping system.
- Lower utilization and decreased life of existing facilities—leaks can reduce the service life of treatment and conveyance systems by requiring system expansions that would not otherwise be required.

AGRU's Aquaculture Solutions incorporates three product categories: Ultra Grip concrete protective liner (CPL), PE 100-RC pipes, fittings, valves, and thermoplastic semi-finished products. Together, these products support the creation of modern fish farms in various environments.

**AGRULINE 24–63" pipes enable the creation of better sea- and land-based aquaculture systems that last longer, demonstrate lower operating costs, and feature improved reliability.**

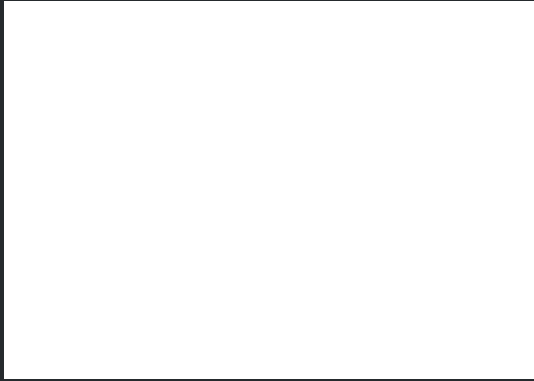
Visit us online at <https://agruamerica.com/application/aquaculture/> for more information about how to enhance water transmission applications with AGRU solutions.





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Illustrations are generic and for reference only.

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