



PolyPipe® Products for Industrial & Mining Applications

Quality and Performance

Industrial grade pipe is equally as important as the material that flows through it.

For industrial and mining applications, you need a pipe system that does more than just serve as a conveyance. You want the pipe to last and to have excellent resistance to corrosion and abrasion. The pipe should also be durable, strong, easy to handle and offer significant value over other types of pipe materials. It is critical that the pipe products are not only cost effective, but can withstand constant pressures and aggressive materials.

High density polyethylene (HDPE) pipe is one of the best values for industrial and mining requirements. PolyPipe® extra high molecular weight (EHMW) polyethylene pipe is designed for the extreme demands of the industry.

PolyPipe® offers several advantages that other piping products simply cannot deliver.

- Superior design life
- Higher flow coefficients
- Excellent weatherability
- Outstanding chemical and abrasion resistance
- Heat fusion joining for leak-tight, fully restrained joints
- Resistance to most chemical environments
- Does not rot, rust or support biological growth

PolyPipe® is continually striving to meet the demands of the market today. Our qualifications as an ISO 9001:2008 company has given us great confidence in our quality system to ensure quality products are manufactured on a consistent basis. It is the policy of PolyPipe® to achieve total quality system performance by understanding and meeting its customer requirements without error, on time, every time.

Fluid flow

Since PolyPipe® has an extremely smooth surface, the coefficient of friction is very low. This results in a minimal loss of head pressure due to frictional losses. Combined with the superior corrosion and abrasion resistant properties of the material, excellent flow properties are maintained throughout the life of the pipe.

For pressurized systems, a Hazen-Williams "C" factor of 150 is used and for gravity flow systems, a conservative "n" value of 0.010 is generally used.

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Chemical Resistance

Polyethylene will not rust, rot, pit or corrode as a result of chemical, electrolytic or galvanic action. Chemicals that pose potentially serious problems for polyethylene are strong oxidizing agents or certain hydrocarbons. These chemicals may reduce the pressure rating for the pipe or be unsuitable for transport. Either can be a function of service temperature or chemical concentration.

Continuous exposure to hydrocarbons can lead to permeation through the material or elastomeric gaskets used at joints. The degree of permeation is a function of pressure, temperature, the nature of the hydrocarbons and the polymer structure of the piping material. The chemical environment may also be of concern where the purity of the fluid within the pipe must be maintained. Hydrocarbon permeation may affect pressure ratings and hinder future connections.

Slurry Applications and Abrasion Resistance

PolyPipe® EHMW has an extremely high resistance to abrasion created by slurries. When compared to traditional materials, PolyPipe® has demonstrated superiority over other piping products. In addition, PolyPipe® is lighter in weight and easier to install than steel. It is also easy to maintain and resists corrosion.

Because of the many variables involved in slurry applications, it is very difficult to establish a definitive table of wear rates for various types of materials. Details of specific applications are available from our Engineering department.

Vacuum Loading

PolyPipe® is designed to withstand internal vacuum in both above ground and buried applications. Proper primary backfill, compacted as uniformly and densely as possible, greatly enhances the ability of PolyPipe® to withstand the additional pressure from external loading.

Thermal Expansion

Polyethylene, like other plastics, has a higher thermal coefficient of expansion than metals. When subjected to a temperature change, unrestrained (not buried) polyethylene pipe will experience expansion and contraction.

The coefficient of thermal expansion/ contraction for PolyPipe® is 1.0×10^{-4} in/in/°F. As a general allowance, 1" per 100' of pipe per 10°F change in temperature.

Forces due to thermal expansion and contraction can be significant. Proper system design should be used to account for the compressive and tension stresses that can be generated.

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Bending radius

An inherent advantage of PolyPipe® is its flexibility and resiliency. The minimum bending radius is based upon the Dimension Ratio (DR) of the pipe. This radius is determined by multiplying the outside diameter of the pipe by the radius factor for the corresponding DR.

When pipe is used in pressure applications, the longitudinal stress created by the sum of the bending radius, internal pressure and other stress loads on the pipe should not exceed the material's design stress rating. Severe but acceptable bends in polyethylene pipelines should be buried or properly restrained.

Pressure, Temperature and Environmental Service Factors

PolyPipe® EHMW internal pressure ratings are dependent upon these factors: (1) Dimension Ratio (DR), (2) the fluid being transported, (3) the service temperature, and (4) the surrounding environment.

The pressure rating is determined in accordance with the Plastics Pipe Institute (PPI) recommended Hydrostatic Design Basis (HDB) for the material, and the physical dimensions of the pipe. Pressure design calculations are based upon the "ISO" equation, which relates the stress on the pipe to the internal pressure.

Use of additional factors will provide a more defined performance characteristic for systems with higher operating temperatures, shorter operational time and system fluid other than water.

Pressure Surges

Due to the physical properties of PolyPipe® EHMW, a significant amount of pressure surge is absorbed through expansion. This elasticity provides for reduction of the shock wave initially and dissipation of the wave.

Per AWWA C906, a system operating below the pressure class rating is capable of handling a surge capacity in accordance with the following: (1) Recurring surges - the surge allowance is 50% of the working pressure rating, and (2) Occasional surges - 100% of the working pressure rating.

Perforated Pipes

PolyPipe® can satisfy your piping requirements for landfill applications such as:

- Leachate Collection and Control Systems
- Drainage and Waste Absorption Fields under control or disposal
- Landfill Gas Collection

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Sizes and Perforation Patterns

PolyPipe® produces pressure rated polyethylene pipe from 1/2" CTS through 65" Actual Outside Diameter. Standard product includes HDPE in coils up to 6" O.D. and straight lengths up to 65" O.D. Sizes available in metric, iron pipe size and ductile iron pipe size are almost always available, but SDR specific.

We also offer a wide range of perforation patterns to meet your piping requirements from 4" through 12" O.D.

If you are looking for a piping system in Landfill applications that offer toughness, strength, flexibility, wear and chemical resistance and dealing with shifting, hot or corrosive soil conditions, you simply can not find a better product than PolyPipe® HDPE.

Color Coded Polyethylene Pipe

Color stripe coding and heat indented data lines are available for all pipe products from PolyPipe®. PolyStripe™ can be manufactured in accordance with the color striping codes developed by the Utility Location & Coordination Council of the American Public Works Association (APWA). Heat indented data lines include the type of polyethylene material, pipe size, applicable manufacturing standards and certifications, material identification codes and the date and location of manufacture. Colored stripes are co-extruded into the pipe outside surface corresponding to the pipe's particular usage. Stripes are permanent colors and are ideal for common trench single line identifiers.

PolyStripe™ Standard Color Designations

- Red – Electric power lines, conduit lighting cables, and FM approved underground fire mains
- Orange – Communications, alarm or signal lines, cables or conduits
- Yellow – Gas distribution
- Blue – Potable water lines
- Green – Sewer and drain lines
- Purple – Reclaim water lines

In addition, heat indented printlines include the type of polyethylene material, pipe size, applicable manufacturing standards and certifications, material identification codes and the date and location of manufacture.

Can be produced in accordance with:

- ASTM D2513 Gas Pipe
- ASTM F714 Industrial
- ASTM F3035 Industrial

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- AWWA C-901 Water Pipe
- AWWA C-906 Water Pipe
- NEMA TC7 Duct Pipe
- FM Underground Firewater
- API 15LE Oil Patch Pipe

Benefits of Specifying PolyStripe Pipe

- Large diameter PolyStripe contains more color coded lines than any other manufacturer's pipe
- Heat indent identification line creates a long-term record of the pipe.
- Quick identification improves project efficiency and simplifies maintenance procedures for years after initial installation
- HDPE is highly resistant to corrosive and abrasive environments
- All color coding meets requirements set by APWA color coordination

Special Orders

Special orders are available. See your PolyPipe® representative for available sizes, dimensions and number of stripes in configuration. If the number of stripes is critical to the project specifications, it is IMPORTANT that PolyPipe® be advised prior to quoting.

For additional information about PolyPipe® products and their application and installation for industrial and mining applications, contact our Engineering Department at 940-668-4419.

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