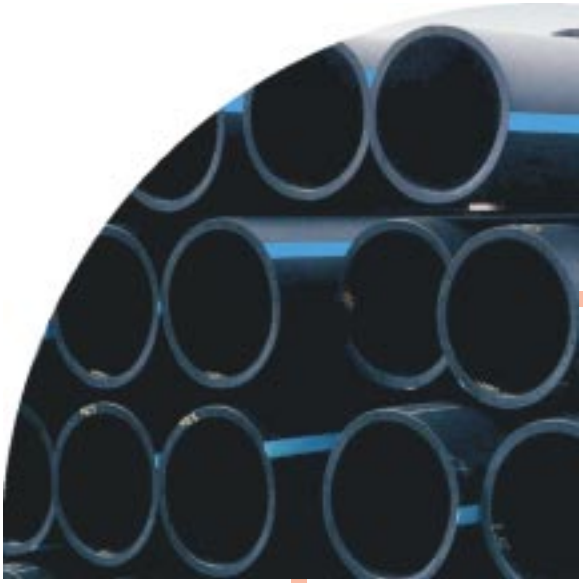
HDPE

High-Density Polyethylene Pipe Systems

Meeting the challenges of the 21st century

PLASTICS PIPE INSTITUTE



Smooth-wall High-Density Polyethylene pipe systems

Meeting the challenges of the 21st century

Piping made from polyethylene is a cost effective solution for a broad range of piping problems in municipal, industrial, marine, mining, landfill, duct and agricultural applications. It has been tested and proven effective for above ground, sur face, buried, sliplined, floating, and sub-sur face marine applications.

High-density polyethylene pipe (HDPE) can carry potable water, wastewater, slurries, chemicals, hazardeous wastes, and compressed gases. In fact, polyethylene pipe has a long and distinguished history of service to the gas, oil, mining and other industries. It has the lowest repair frequency per mile of pipe per year compared with all other pressure pipe materials used for urban gas distribution.

Polyethylene is strong, extremely tough and very durable. Whether you're looking for long service, trouble-free installation, fle xibility, resistance to chemicals or a myriad of other features, high-density polyethylene pipe will meet all your requirements.

HDPE

HDPE PIPE
SAVES BOTH TIME AND MONEY

Lower life cycle costs

- Corrosion resistance. Does not r ust, rot or cor rode.
- Leak tight. Heat-fused joints create a homogenous, monolithic system. The fusion joint is stronger than the pipe.
- Maintains optimum flow rates. Does not tuberculate, has a high resistance to scale or biological build-up.
- Excellent water hammer characteristics. Designed to withstand surge events.
- High strain allowance. Virtually eliminates breakage due to freezing pipes.
- Additional cost savings are achieved by lower instance of repairs.
- With no exfiltration or infiltration, potable water losses and groundwater nuisance treatment costs encountered in traditional piping systems are eliminated.

Reduced installation costs

- Material of choice for trenchless technology. Used in directional boring, plowing, river crossings, pipe bursting and sliplining.
- Fewer fittings due to pipe fle xibility. Allowable bending radius of 20 to 25 times outside diameter of pipe.
- Lighter equipment required for handling and installation than with metallic materials.
- Eliminates the need for thr ust blocking. Heat fused joints are fully restrained.
- Light weight and longer lengths allow for significant savings in labor and equipment.

Consider the following features of

HDPE pipe:

- **LEAK FREE.**
  Polyethylene pipe is normally joined by heat fusion. Butt, socket, sidewall fusion and electrofusion create a joint that is as strong as the pipe itself, and is virtually leak free. This unique joining method produces significant cost reductions compared to other materials.

- **CORROSION, ABRASION, AND CHEMICAL RESISTANT.**
  Polyethylene piping's performance in mining, dredging and similar applications proves it will outwear many more costly piping materials when conveying a variety of abrasive slurries. HDPE has excellent corrosion resistance and is virtually inert. It does not need expensive maintenance or cathodic protection. It offers better overall resistance to corrosive acids, bases and salts than most piping materials. In addition, polyethylene is unaffected by bacteria, fungi and the most "aggressive" naturally occurring soils. It has good resistance to many organic substances, such as solvents and fuels.

- **EXCELLENT FLOW CHARACTERISTICS.**
  Because polyethylene is smoother than steel, cast iron, ductile iron, or concrete, a smaller PE pipe can carry an equivalent volumetric flow rate at the same pressure. It has less drag and a lower tendency for turbulence at high flow. Its superior chemical resistance and "non-stick" surface combine to almost eliminate scaling and pitting and preserve the excellent hydraulic characteristics throughout the pipe service life.

- **LIGHTWEIGHT AND FLEXIBLE.**
  Polyethylene pipe is produced in straight lengths or in coils. Made from materials about one-eighth the density of steel, it is lightweight and does not require the use of heavy lifting equipment for installation. It reduces the need for fittings, is excellent in shifting soils and performs well in earthquake-prone areas. HDPE resists the effects of freezing and allows bending without the need for an excessive number of fittings. Since HDPE is not a brittle material, it can be installed with bends over uneven terrain easily in continuous lengths without additional welds or couplings.

- **DUCTILITY AND TOUGHNESS**. Polyethylene pipe and fittings are inherently tough, resilient and resistant to damage caused by external loads, vibrations, and from pressure surges such as water hammer. Even in cold weather polyethylene pipe is tolerant to handling and bending.

- **MANUFACTURED UNDER AWWA, NSF, ASTM, AGA, EPA, DNR, DOT, API, FM, CSA AND OTHER NATIONALLY RECOGNIZED STANDARDS.** Polyethylene pipe is listed and approved by the standards or committees of the agencies listed above.

- **AVAILABLE IN DIAMETERS FROM ½ INCH TO 63 INCH.** Polyethylene pipe is available in a wide range of diameters and wall thickness, with flanges, elbows, tees, wyes, and valves, providing a total system solution. HDPE pipe is also available in Iron Pipe Size (IPS), Ductile Pipe Size (DIPS) as well as metric sizes. Plastic Pipe Institute members can provide pipe, fittings and other appurtenances.

- **APWA COLOR CODING BY APPLICATION.** Polyethylene pipe is available with color coding by application as developed by the utility location and coordination council of the American Public Works Association (APWA).

Case Histories

Pipe bursting project saves time and money

As part of its sewer rehab project, the city of Baytown, Texas, elected to use 36-inch HDPE pipe to replace 36-inch Reinforced Concrete Pipe (RCP) sewer lines. To burst more than 3700 feet of pipe in residential areas, the contractor used both static and pneumatic bursting systems. The pipe bursting method was recommended over three other procedures to avoid the major impact of bypass pumping and reduced flow capacity involved.

Sliplining polyethylene pipe rescues Colorado highway

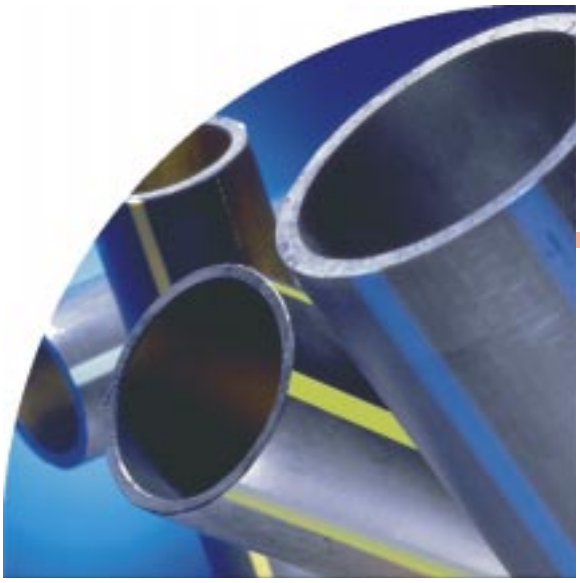
When a section of corrugated metal pipe culvert rusted and washed out, a busy Colorado highway was partially closed down to traffic. The Colorado Department of Transportation acted quickly to line the culvert with polyethylene pipe. Its light weight and durability were perfect for the project's high elevation and isolated location. The line pipe was inserted from the uphill side of the culvert and pulled into position, then the joints were assembled. Filling the annular void space between the existing Corrugated Metal Pipe (CMP) and the liner pipe with grout was challenging, but successful. The liner and direct bury portions are in place, with flow restored and traffic running normally on the highway above it.

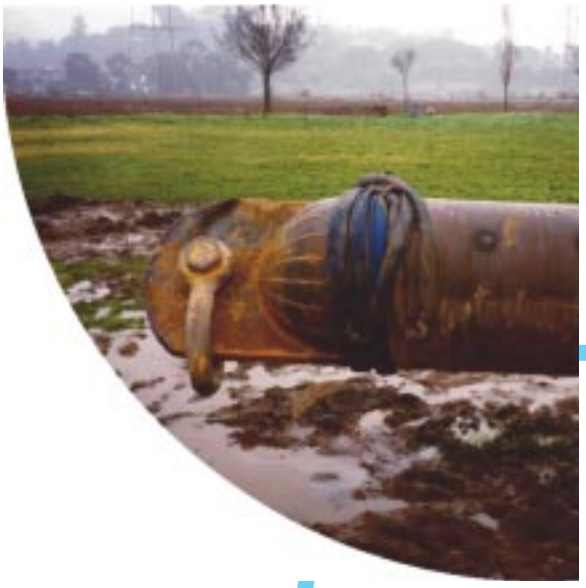
HDPE restores city drinking water

A deteriorating cast iron water main in Henryetta, Oklahoma was leaking 300,000 gallons of water per day and threatening to shut off the city's water supply. Complicating factors included water temperature that changed 30 degrees in short time periods and steep slopes in the location of the leak. Reducing the number of pipe joints along the slope and accommodating the temperature differential, along with elevation problems, convinced city officials to select HDPE pipe. Fourteen-inch Iron Pipe Size (IPS) DR-11 water pipe was installed along the 1,400-foot section of line extending over the steep slope to the flatland below. The HDPE pipe solved the elevation and water temperature problems, and allowed for rapid installation that avoided shutting off the city's main water supply for an extended period of time.

Taking safe water to a rural community

The cost of constructing long lengths of distribution piping deprives many rural residents of safe drinking water. Carlsbad Springs in Ontario, Canada studied a steady-flow water supply technology and chain trencher installations method, discovering they could save 66% over conventional water supply installations. Although high-density polyethylene pipe was not in the standards for watermain materials, an assessment of the material and appropriate jointing methods determined HDPE pipe was flexible, resistant to corrosion and smooth-walled. Carlsbad Springs installed approximately 33.5km (20.8mi.) of HDPE watermain ranging from 75mm to 200mm (3 inch to 8 inch) diameter. Using HDPE and chain trenching excavation, watermain installation costs were as low as $15 per foot for 6-inch diameter pipe.

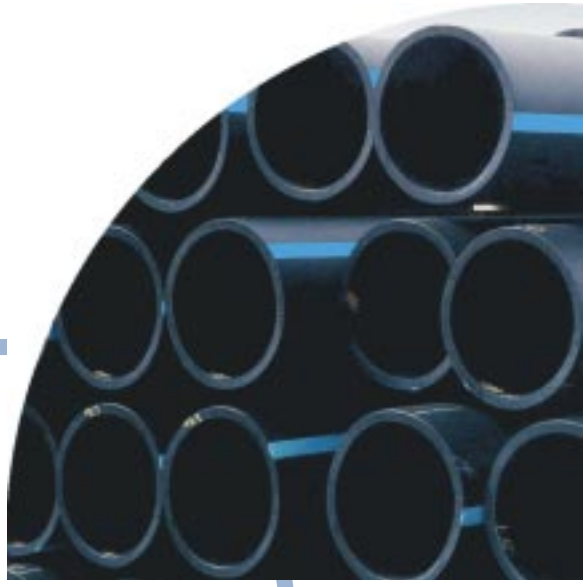




Horizontal directional drilling solves overflow problems at San Rafael Canal

A nightmare situation faced the San Rafael, California Sanitation District. Few challenging environmental demands can compare with preventing tons of raw sewage from dumping into San Francisco Bay. A pipeline constr ucted in the 40s to transfer sewage and groundwater was rusting and cor roding, and had inside sedimentary buildup that decreased its capacity significantly. Without replacing the entire sewage system, the best solution was to install two new parallel polyethylene pipelines 15 feet below the bottom of the canal. Laying the pipe involved complicated directional drilling at a vertical curve with a series of tight maneuvers, with a compound cur ve around private property, and without disturbing the nearby wetlands. The project utilized 16-inch SDR - 11 and 26-inch SDR-11 HDPE pipe that met the criteria for pullback, ability to bend and to withstand the stress of horizontal directional drilling. Excavation and environmental impact were kept to a minimum, and the project was completed in four weeks, one-third the time required for the average trench-digging operation, at a total cost of $2.4 million.

THE PLASTICS PIPE INSTITUTE (PPI)



Since its founding in 1950, PPI has been the voice for its members who are involved in manufacturing and distributing polyethylene pipe systems. Members share an interest in educating industry about the benefits of HDPE pipe, and broadening market opportunities to use polyethylene piping systems for water and gas distribution, sewer and wastewater, oil and gas production, industrial and mining uses, power and communication duct, and ir rigation.

Members include

- Manufacturers of polyethylene pipe, fittings and valves
- Manufacturers of polyethylene piping materials
- Manufacturers of equipment and machinery used for fabricating, joining or installing polyethylene piping systems

For additional infor mation, visit the PPI web site at www.plasticpipe.org or contact our headquarters in Irving, TX at 469/499-1044, fax 469/499-1063.

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