

V-Bio Enhanced Polyethylene Encasement

By Jordan Byrd, AMERICAN Ductile Iron Pipe

V-Bio Polyethylene Encasement is the latest scientific advancement in corrosion control for ductile iron pipe. Its revolutionary formulation allows for complete confidence on the part of the owner, engineer and municipality that no matter how aggressive the soils, the rugged iron pipe installed will last for generations. This new technology builds more than 50 years of research and development by the Ductile Iron Pipe Research Association.

Traditional single-layer polyethylene encasement was first installed on cast iron pipe in 1958 in LaFourche Parish, Louisiana. Since then, it has been used to successfully protect millions of feet of iron pipe in severely corrosive soils across the United States and internationally. In fact, the use of polywrap to prevent corrosion was so successful, that in 1972 the American Water Works Association published the C105/A21.5-10 standard for its use with gray and ductile iron pipe.

Since that time many incremental improvements have been made to the design of polyethylene encasement. Some of the more notable enhancements include the development of high density cross laminated polyethylene encasement in 1993 and the addition of an ultraviolet inhibitor to any natural or colored film in 1999. These advancements not only improved the operational characteristics of the wrap itself, making it more durable, but with every development, the service life of the iron pipe within the wrap was further extended.

Testing has been conducted by the Ductile Iron Pipe Research Association at several highly corrosive test sites across the country over the past 50 years. The results of those tests have proven the high degree of corrosion protection provided by polyethylene encasement. Field tests have also indicated that the dielectric capability of polyethylene provides shielding for iron pipe against stray current at most levels encountered in the field. Figure 1 below illustrates traditional polywrap's ability to virtually eliminate corrosion.

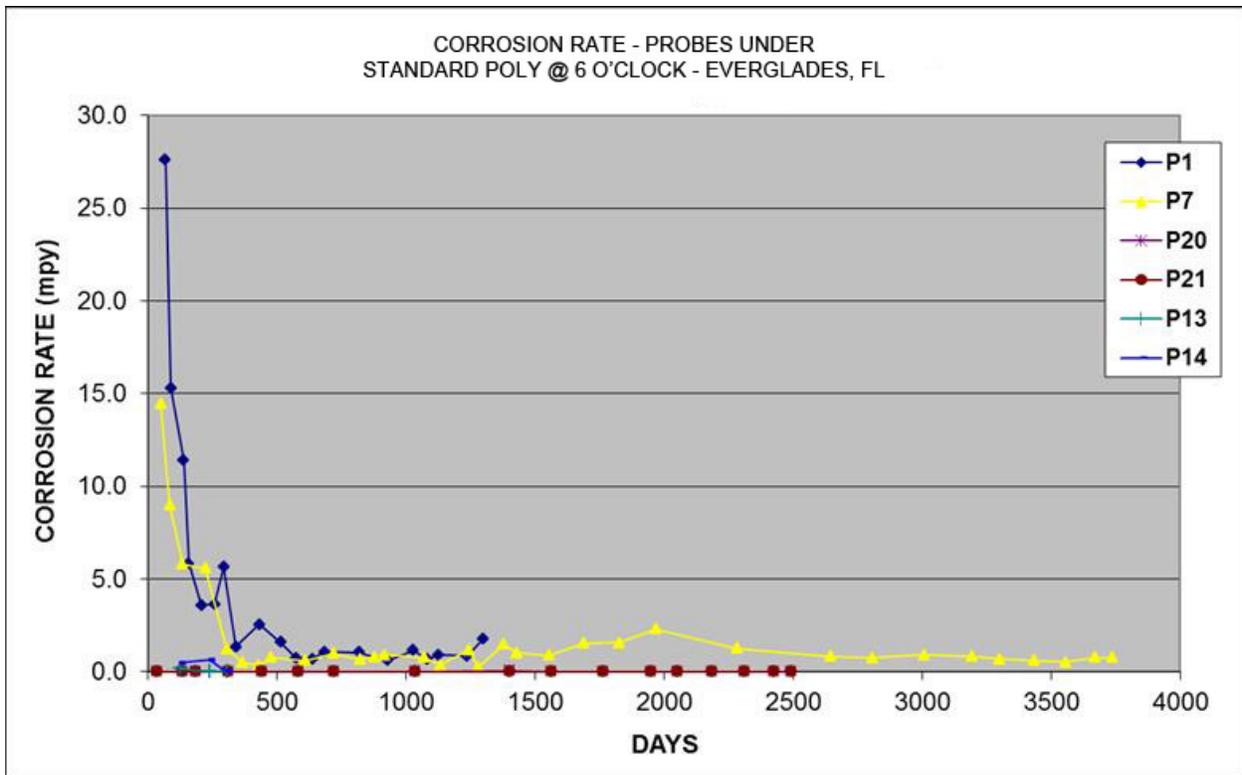


Figure 1. Corrosion rate of probes under standard polyethylene encasement.

Traditional-single layer polyethylene encasement works by eliminating the supply of fresh oxygen to the iron pipe. Moisture present between the polywrap tubing and the pipe immediately following installation will initially bear some characteristics of the surrounding soil, and corrosion may start. However, as shown in figure 1, within a very short period of time initial oxidation depletes all available oxygen in the environment, and a state of chemical equilibrium is reached. In the years following, oxidation is reduced to an extent that all but eliminates its impact on the life of the pipe.

V-Bio enhanced polyethylene encasement is a groundbreaking advancement in corrosion control, because it addresses and chemically eliminates the influence of anaerobic bacteria on ductile iron pipe. The slight initial corrosion that is present in some installations is prevented by the formulation within V-Bio. This corrosion prevention is made possible because of the infusion of a proprietary blend of antimicrobial biocide into the wrap itself. This biocide serves to prevent microbiologically influenced corrosion on the pipe. Also implanted in the new V-Bio polyethylene encasement is a volatile corrosion inhibitor to control galvanic corrosion. The net effect of these scientific advancements is shown below in figure 2.

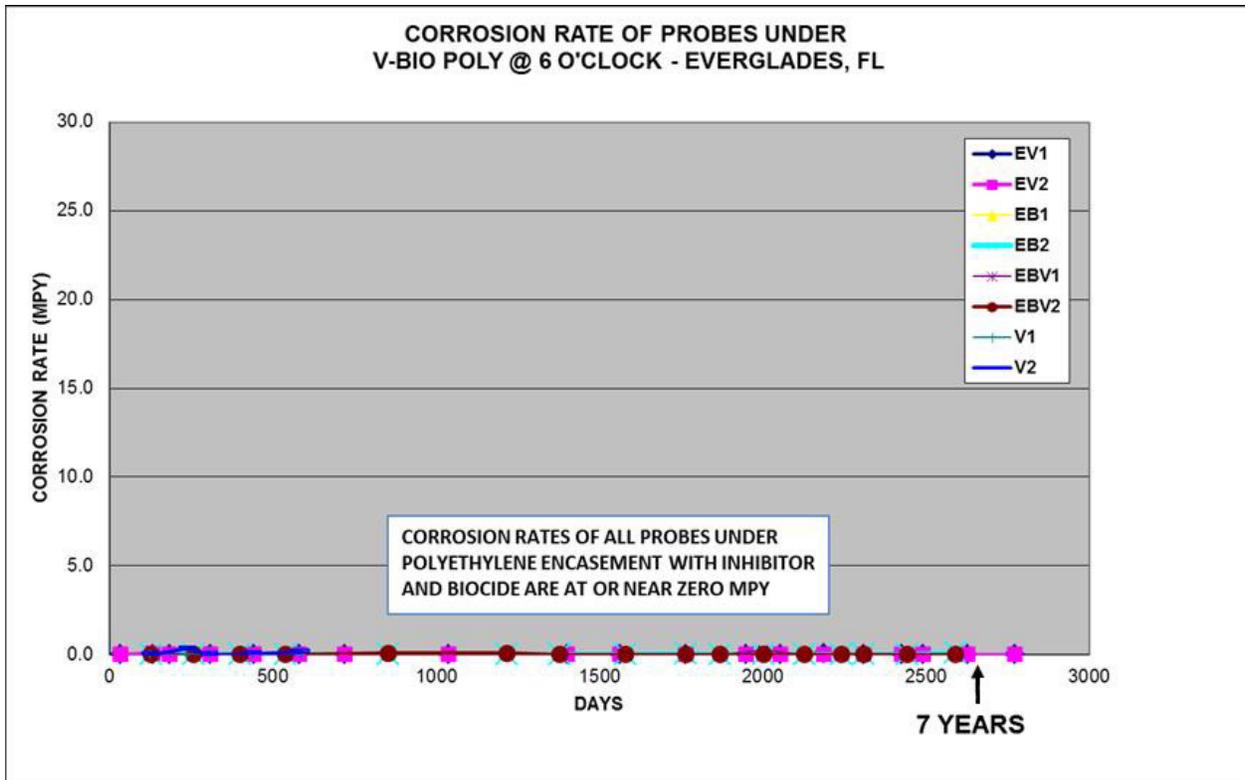


Figure 2. Corrosion rate of probes under V-Bio polyethylene encasement.

With V-Bio polyethylene encasement, both initial and long-term corrosion are prevented. Even with oxygen present immediately following installation, there is a near-zero rate of oxidation. V-Bio consists of three layers of co-extruded linear low-density polyethylene film that are fused into one. The inside surface of the wrap is infused with the corrosion inhibitor mentioned above. The blue tint of the inner layer demonstrates the presence and uniformity of the corrosion inhibitor.

The Ductile Iron Pipe Research Association has taken an already proven system and made it physically tougher by co-extruding three layers of polyethylene. In addition, it has made it smarter by infusing the tubing with cutting edge chemistry in the form of an anti-microbial biocide and volatile corrosion inhibitor. V-Bio enhanced polyethylene encasement is the definitive solution to your corrosion concerns no matter the environment.

For more information, contact AMERICAN at 1-800-442-2347.

V-Bio Enhanced Polyethylene Encasement and Corrosion Control



V-BIO ENHANCED POLYWRAP
Three layers of co-extruded linear low-density polyethylene film that are fused into one.

ENGINEERED TO DO MORE
Inside surface is infused with an antimicrobial biocide and a volatile corrosion inhibitor.

GENTLE ON OUR PLANET
Ductile iron pipe is made from approximately 93% recycled metal.

STRENGTH YOU CAN COUNT ON
Ductile iron pipe has 10 times the impact strength, 9 times the tensile strength and 4 times the burst strength of PVC pipe.

INCREASED FLOW RATES
Ductile iron provides real pumping cost savings of up to 30% annually because of its larger inside diameter.

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THE RIGHT WAY
DUCTILE IRON PIPE
FLOW CONTROL
INTERNATIONAL
SPIRALWELD PIPE
STEEL PIPE

Polyethylene encasement is the most popular, economical and successful method of corrosion control for ductile iron pipe. Since its first installation in a water system in 1958, it has been used to protect hundreds of millions of feet of cast and ductile iron pipe in aggressive environments.

The iron pipe industry has always been innovative and now, with V-Bio, the result is an enhanced polyethylene encasement that specifically addresses the potential influence of anaerobic bacteria and inhibits the formation of corrosion cells under the wrap.