

Metallic Zinc Coated Pipe

Active Corrosion Protection for Ductile Iron Pipe

Zinc metallizing with a high purity zinc wire has been utilized for external corrosion control of iron pipe for over 50 years. Initially used in Europe, zinc coating is now becoming more widely used in the United States with many municipalities and water works boards standardizing on ductile iron with metallic zinc coating.

Metallic zinc coating on ductile iron pipe is thermally applied using either an arc spray or flame spray process in which metallic zinc is heated to a molten state and projected in small droplets by spray guns onto the pipe surface. In the arc spray system, two high purity zinc wires are brought together under a high electrical potential which results in the wires being melted at the point of contact. In the flame spray process, the zinc wire is passed through a high temperature flame which melts the zinc. The molten zinc droplets are then propelled to the surface by clean compressed atomizing air, providing an active inner layer of 200 g/m² of pure metallic zinc under the asphaltic topcoat.

Numerous studies and publications from around the world over the last 50 years have demonstrated that thermal spray metallic zinc with topcoat and enhanced polyethylene encasement are both economical and effective methods of external corrosion control for iron pipe. In environments where neither zinc nor enhanced polyethylene encasement are recommended individually, additional studies in Europe and the USA have shown that combining arc spray metallic zinc coating with polyethylene encasement produces a synergistic corrosion protection system.

Call your local U.S. Pipe Sales Manager to learn about the various uses and options available with Metallic Zinc Coated pipe. Contact your local US Pipe Sales Manager or Technical Resource representative for US Pipe's recommended Metallic Zinc Specification



FEATURES & BENEFITS

- Furnished by U.S. Pipe for over 25 years
- Uniform cathodic protection of the iron pipe surface.
- Thicknesses compatible with critical joint tolerances.
- No special considerations with respect to field cuts, tapping saddles, or corporation stops.
- No special handling or installation procedures required.
- Ability to "self-heal" in many environments.
- Metallic zinc coating on ductile iron pipe is recommended to be utilized in conjunction with V-BIO™ polyethylene encasement.

STANDARDS

- ANSI/AWWA C151/A21.5 Ductile Iron Pipe, Centrifugally Cast for Water.
- ANSI/AWWA C104/A21.4 Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
- ANSI/AWWA C111/A21.11 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- ANSI/AWWA C105/A21.5 Polyethylene Encasement for Ductile Iron Pipe Systems.
- ASTM A746-03 Standard specification for Ductile Iron Gravity Sewer Pipe.
- ASTM A716-08 Standard Specification for Ductile Iron Culvert Pipe.
- ASTM A536 Standard Specification for Ductile Iron Castings.
- ISO 8179-1, Ductile Iron Pipes-External Zinc-based Coating-Part 1: Metallic Zinc with Finishing Layer (ISO 2004)



HISTORY & ADDITIONAL NOTES

In Europe, the primary method of corrosion control for iron pipe since 1958 has been an external coating of arc spray metallic zinc plus topcoat. In 1985, the first international standard on metallic zinc coating was issued as ISO 8179-1, Ductile Iron Pipes-External Zinc-based Coating-Part 1: Metallic Zinc with Finishing Layer (ISO 2004).

Additional studies in Europe have confirmed that combining metallic zinc coating with polyethylene encasement produces a synergistic corrosion protection system. The zinc will protect the pipe at unrepaired damage to the encasement, and the encasement will extend the life of the zinc, enhance the development of zinc corrosion products as the zinc sacrifices itself, create a homogeneous environment around the pipe with some biocidal characteristics, and allow the zinc to be utilized in some severe environments where it is otherwise not recommended.

ADDITIONAL NOTES

Zinc coated pipe is recommended to be encased in AWWA C105 polyethylene or V-Bio® in the following environments: where the soil is acidic ($\text{pH} \leq 5$) or very basic ($\text{pH} > 9$), extremely low resistance soils ($< 1,500$ ohm-cm), peat soil, certain artificial backfill polluted by chemical products or cinders with sulfur, in sea or fresh water and subject to intensive running water, outside mechanical abrasive and corrosive conditions, areas with stray electrical currents, and installations where soil conditions are unknown.



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