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# Zinc Explained

## Overview



- According to industry estimates, **it costs the U.S. around \$36 billion a year to fix the damage caused by corrosion** to our water and sewer systems.
- Corrosion is responsible for over 90% of the 240,000 pipe breaks experienced in the U.S each year.
- Corrosion protection is a key consideration for utilities wanting to protect their infrastructure assets.
- Zinc coatings inhibit corrosion and can extend the lifetime of a fitting by a factor of between **10-100x**.



## Why Zinc?

- Corrosion is the result of oxygen combining with a metallic element which can be caused by a number of interacting factors.
- A coating of zinc acts as both a physical and galvanic barrier between the bare metal (ductile iron) and the oxidation process that causes a corrosive attack.
- A zinc rich layer between an asphalt topcoat and the DI protects the ductile iron pipe or fitting by oxidizing before the DI, adding a new barrier of zinc oxide under the top coat.
- Zinc is unique because it has the power to actively self-heal in many environments. Other standard coatings including Fusion Bonded Epoxy (FBE) do not possess this unique ability.
- Unlike FBE, zinc will not chip and does not require special installation or repair procedures.

## Zinc Coating Options

- The ISO has a long-standing commitment to zinc coated pipes and fittings and zinc coatings have been widely used in Europe for the last 50 years.
- There are two international specifications for zinc coatings on ductile iron pipes, fittings, joint and accessories, these are ISO 8179-1 and ISO 8179-2.
- SIGMA can provide products that comply with both the -1 and -2 specification.
- 8179-1, often known as **METALLIZED ZINC**, involves spraying a thin layer of metallic zinc on a pipe or fitting. The -1 spec requires the application of not less than 200 g/m<sup>2</sup>.
- 8179-2 is often known as **ZINC RICH PAINT COAT**. This coating is thicker than -1 and its spec requires a higher deposition of not less than 235 g/m<sup>2</sup>.
- Both SIGMAZINC1 (8179-1 compliant) and SIGMAZINC2 (8179-2 compliant) fittings are supplied with a topcoat of Black Asphaltic Paint, which acts as a sealant and allows the slow formation of zinc compound to form a barrier protecting the iron surface from corrosive attack.

## Which Zinc Coating is Best? -1 or -2?

- -1 and -2 are equally durable and reliable.
- SIGMA recommends its SIGMAZINC2 coating as its preferred option for waterworks customers due to logistics and repair capabilities. In the field, both -1 and -2 fittings repairs are always conducted using ZINC-2 coating. There is evidence that the additional mil thickness of the SIGMAZINC2 barrier coating adds enhanced protection against corrosion.