



PRODUCT FEATURES

- INCREASED SERVICE LIFE FOR CORRUGATED STEEL PIPE**

Aluminized Type 2 meets durability requirements for most pipe applications in settings where the performance of other metallic pipe is limited.

- ALUMINIZED TYPE 2 COATING**

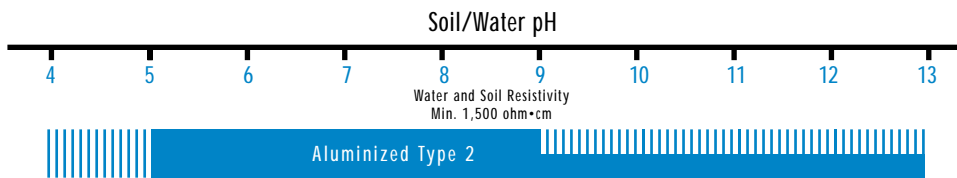
The duplex coating exhibits spontaneous, superior passive film protection in the aluminum layer. The aluminum-iron intermetallic alloy layer provides a second and major part of the coating's enhanced protection mechanism.

**ALUMINIZED STEEL TYPE 2**

**Meeting New Durability Standards and Expanding Environmental Limits with Corrugated Steel Pipe**

The use of Aluminized Steel Type 2 with its bi-layer Al/Al-Fe protective metallic coating in drainage pipe service increases the range of environmental conditions and the CSP service life attained within those conditions. The application of Type 2 within the recommended 5–9 pH range and the  $\geq 1500$  ohm-cm resistivity range, indicated below, covers most pipe environments. Based on field studies of 43 years, Type 2 service life in these ranges is estimated at 75 years at 16 gage. The duplex Type 2 coating exhibits spontaneous passive film corrosion protection in the aluminum layer and inherent corrosion/abrasion protection in the Al-Fe intermetallic alloy layer. The Al-Fe alloy layer provides a major portion of coating protection.

Aluminized Steel Type 2 Application Guidelines



Key:  
 May Require Protective/Invert Treatments  
 All Cementitious Fills Are Compatible With Aluminized Type 2

## Comparison of Galvanized and Aluminized Type 2 Performance

### GALVANIZED

Galvanized steel, the most widely used corrugated steel pipe material, provides good performance in most natural pipe environments. In pipe waters, galvanized performs best over the prevalent conditions of near-neutral to high pH and intermediate resistivity where protective scaling due to water hardness/alkalinity naturally occurs. Extremes of soft water and CO<sub>2</sub> are the main limiting factors.

Another important limiting factor in galvanized performance is erosion corrosion and abrasion by high-velocity surface runoff. Erosion corrosion is invert corrosion accelerated by aeration and scouring effects in high-velocity water. Abrasion is mechanical wear by bedload transported by high-velocity water and is always accompanied by erosion corrosion.

Galvanized is resistant to chloride/sulfate salts at resistivities greater than 2000 ohm•cm.

### ALUMINIZED TYPE 2

Each of the layers of the duplex Type 2 coating contributes unique protective features. The protection of the two layers combined affords several advantages.

#### Advantages

- Performance of either coating layer independent of water scaling; immunity of both layers to the effects of soft water.
- Enhanced resistance of both coating layers to CO<sub>2</sub> corrosive effects.
- Enhanced resistance of both coating layers to erosion corrosion.
- Enhanced resistance of the Al-Fe layer to more common mild-to-moderate abrasive effects.
- Resistance to chloride/sulfate salts down to at least 1500 ohm•cm, oftentimes lower. Additional water/soil testing is advisable to determine suitability at resistivities below 1500 ohm•cm.
- Resistance to dry climate soils down to at least 1000 ohm•cm.
- Although 5–9 pH is the recommended environmental guideline, there actually is no upper pH limit for Type 2, as there is with aluminum, for the Al-Fe layer and the steel substrate are fully resistant to high pH.
- Type 2 is fully compatible with concrete headwalls and with cementitious backfills such as flowable fill and cement-stabilized sand since the Al-Fe alloy layer alone is adequately resistant to high-pH cement alkalinity and to corrosive soil effects.

#### Application Limits

- Severe corrosive environments such as seawater, acid minewater or sanitary sewage should be avoided.
- Gray, olive or blue clay soil portions of a highly acidic nature (pH = 2.5–3.5, typically) found in some heterogeneous soils of certain small geographical regions necessitate precautionary measures for various pipe materials. In these regions, an asphalt coating or a select granular fill is sometimes required to prevent direct contact with the highly acidic clay portions.
- Severe abrasive conditions necessitate use of supplemental invert pavement.
- De-icing salts are normally not a problem. Under certain conditions salt concentration can build up and cause problems for various pipe materials. If water/soil testing indicates a problem, protective measures are available.



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The product, engineering  
and research information  
in this literature is  
applicable exclusively  
to AK Steel Aluminized  
Steel Type 2.