



External Anti-corrosion of Pipelines

3PE is currently the mainstream external anti-corrosion technology for long-distance oil and gas pipelines and industrial pipelines at home and abroad. It boasts excellent anti-corrosion performance, high mechanical strength and long service life, and is widely applied in harsh service environments such as buried pipelines.

Bottom Layer: FBE (Fusion Bonded Epoxy)

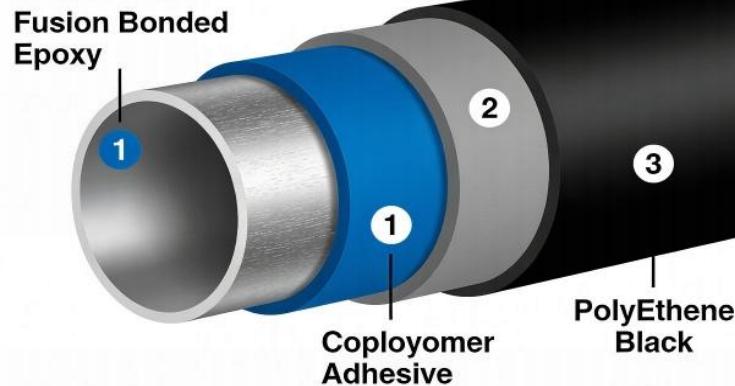
Middle Layer: AD (Adhesive)

Outer Layer: HDPE (High Density Polyethylene)

Weather-Resistant Epoxy Powder: Weather-resistant epoxy powder is a thermosetting powder coating suitable for harsh outdoor environments, boasting excellent weather resistance and heavy-duty anti-corrosion performance. Its core base materials are hydrogenated bisphenol A and cycloaliphatic epoxy resin, combined with modified curing agents as well as additives such as ultraviolet absorbers and antioxidants. This formulation can effectively resist ultraviolet radiation, wind and rain erosion, and prevent coating chalking, fading and aging. The coating features high mechanical hardness and strong toughness. It can be applied via electrostatic spraying or fluidized bed dipping, achieving uniform film thickness in one coat with fast curing speed. Widely used for outdoor overhead oil and gas pipelines, steel pipelines coated with this powder can have an outdoor service life of over 30 years.

Advantages

- Superior Anti-corrosion Performance:** Resists acid, alkali, salt and soil corrosion, significantly extending the service life of equipment.
- Excellent Weather Resistance:** Withstands ultraviolet radiation, wind and rain erosion; the coating does not chalk or fade, featuring outstanding stability.
- Favorable Mechanical Properties:** High hardness, impact resistance and wear resistance, capable of withstanding external damage during construction.
- Environmentally Friendly & Construction-friendly:** Solvent-free with no volatile emissions; applied via electrostatic spraying or fusion bonding process for a uniform coating.
- Wide Application Range:** Suitable for oil and gas pipelines, outdoor equipment, meeting heavy-duty anti-corrosion needs across multiple scenarios.
- Cost-effective & Durable:** The coating service life can reach more than 30 years, with low later-stage maintenance costs and remarkable comprehensive cost performance advantages.



Application Scope



Three-Layer Polyethylene (3PE) Anti-Corrosion Coating

- ① Buried Long-Distance Pipelines** The core anti-corrosion solution for buried pipelines conveying oil, natural gas, and refined oil products. It resists soil corrosion and stray current interference, adapting well to complex geological conditions.
- ② Urban Pipe Network Systems** Applied to buried urban gas, water supply and drainage pipelines. It tolerates underground humid environments and chemical medium erosion, ensuring the long-term safe operation of the pipe network.
- ③ Submarine & Water-Crossing Pipelines** Suitable for short-distance coastal and submarine oil/water transmission pipelines, with excellent seawater corrosion resistance and hydro static pressure resistance.

Weather-Resistant Epoxy Powder Coating

- ① Outdoor Overhead Pipelines** Used for natural gas and thermal power overhead pipelines. It directly resists ultraviolet radiation, wind and rain erosion, preventing coating chalking and fading without the need for additional protective layers.
- ② Building & Bridge Steel Structures** Applied to bridge trusses, transmission towers, building curtain wall steel components, etc. It provides both anti-corrosion protection and decorative effects, maintaining long-term appearance integrity.
- ③ Outdoor Mechanical Equipment** Suitable for open-pit mining equipment, agricultural machinery, wind turbine towers, etc. It withstands outdoor temperature fluctuations, sand and dust abrasion, and chemical medium erosion.
- ④ Pipe Fittings & Special-Shaped Components** Used for anti-corrosion coating of pipeline connectors like elbows, tees, and flanges. The coating has strong adhesion and enables uniform coverage on components with complex shapes.



PRODUCTION STANDARDS OF 3LPE COATED PIPES

3LPE Coated pipes are manufactured according to the following standards:

- DIN 30670
- CSA Z245.21
- ISO 21809-1

PERFORMANCE OF 3LPE COATED PIPE

No.	Item	Performance Indicators	
1	Tensile Strength	Axial Direction, Mpa	≥20
		Circumferential Direction, Mpa	≥20
		Deviation, %	≤15
2	Elongation after Fracture, %		≥600
3	Indentation Hardness (mm)	23°C	≤0.2
		50°C or 70°C	≤0.3
4	Endurably Environmental Stress Cracking (F50), h		≥1000

MINIMUM THICKNESS OF 3LPE COATED PIPE

Pipe sizes (specified O.D.)	Minimum Coating Thickness Chart (mm)
≤10 3/4" (273.1 mm)	2.5
<12 3/4" (323.9 mm) to ≤18* (457 mm)	2.8
>20" (508.0 mm) to ≤30" (76 mm)	3
>32" (813.0 mm)	3.3

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