

APPLICATION SOLUTION 05

Above-Ground Pipework and Structural Steel

Problem, corrosion mechanism, recommended system, product combination and application procedure.

3 000 h

UV ageing, outer wrap

3 000 h

Salt spray, outer wrap

No

Hot work required

Live

Plant maintenance



01 The Problem

Above-Ground Pipework and Steel Maintenance

Pipe racks, utility lines and structural steel in an operating plant corrode locally, not uniformly: at supports, at fittings, under insulation terminations and at bolted connections. Recoating those details properly means scaffolding, containment, blasting and a shutdown – which is why they are usually patched, and why the patches fail again.

Corrosion risk

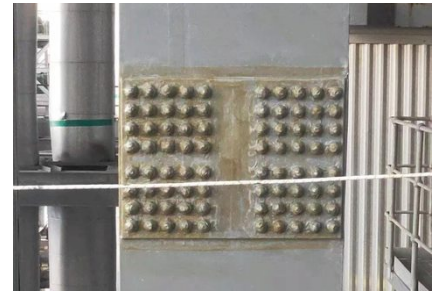
- Corrosion under and around pipe supports where water is trapped.
- Local paint breakdown at fittings, welds and edges in humid industrial atmospheres.
- Ultraviolet degradation and thermal ageing of exposed protective layers.
- Crevice corrosion at bolted connections, base plates and connection plates.
- Restricted access and permit constraints that rule out blasting and hot work.



Pipe-rack utility lines



Local corrosion at fittings



Bolted connections and base plates

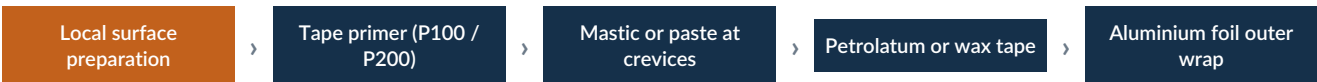
02

Recommended System

Why this configuration

A cold-applied wrapping system is a maintenance method, not a construction method. Local preparation to St2, primer, paste at the crevices, tape over the detail, reflective outer wrap — done in one visit, on a live line, without a permit for hot work and without waiting for a coating to cure. The aluminium foil outer wrap carries the ultraviolet and weather load, so the primary layer beneath it is not thermally aged.

System structure



Product combination and application procedure

Stage	Product	Procedure
Prepare	—	Remove loose corrosion products and unstable coating locally. St2 hand or power tool preparation; abrasive blasting and containment are not required for St2-prepared steel.
Prime	Tape primer P100 (horizontal) / P200 (vertical, overhead)	Apply a continuous film and work it into pitting, weld seams and connection gaps.
Profile	Lightweight sealing mastic (M100)	Press into support contact zones, behind bolt heads, into base-plate gaps and connection crevices.
Seal	Petrolatum tape or microcrystalline wax tape	Wrap the detail with the specified overlap; the wax system is selected where higher temperature or a topcoatable finish is required.
Protect	Aluminium foil outer wrap tape	Reflective outer layer against solar radiation and ultraviolet attack; seal all terminations.

Zhuohuang systems are modular. Overlap, tape width, number of layers and the protective outer wrap are confirmed for each asset, and components are added or omitted according to substrate condition, geometry and exposure. Where a project specification or acceptance standard applies, its requirements take precedence over this general sequence.

Choosing the protective outer layer

The outer wrap is selected for the exposure, not fixed by the primary tape. Three outer wrap materials are manufactured in-house, so the outer layer can be matched to ultraviolet, soil stress and handling risk.

Outer wrap option	When it is selected
Aluminium foil outer wrap	The standard choice — reflective, UV-resistant, clean finish on a live plant.
PP fibre-reinforced outer wrap	Supports, shoes and guides where abrasion and mechanical contact govern.
No outer wrap	Indoor or sheltered details with no UV and no mechanical exposure.

03

Key Benefits and Evidence

What the customer gets, and what supports it

- 3 000 h ultraviolet ageing with no abnormality on the outer wrap (GB/T 14522-2008).
- 3 000 h neutral salt spray, rust grade A, rust degree 0 % (GB/T 10125).
- Reduced surface preparation (St2), no containment, no hot work permit.
- Work proceeds on live lines with no curing time.
- Wax system can be topcoated for plant colour coding.
- Locally repairable and re-wrappable at the next turnaround.

Typical applications

- Pipe-rack utility lines and process pipework
- Pipe supports, shoes, hangers and guides
- Structural steel connections, base plates and anchor bolts
- Exposed valves, flanges and instrument connections

Field reference

NANJING IRON & STEEL GROUP · METALLURGICAL INDUSTRY, CHINA

Asset	Utility pipelines in pipe racks
System	Petrolatum wrapping system
Reference	Project reference published 2021

Challenge. Pipe-rack utility lines operate continuously in a humid industrial atmosphere. Local paint breakdown, corrosion at fittings and restricted access make conventional recoating difficult and disruptive.

System applied. Manual surface preparation to remove loose corrosion; Primer or paste where required; Petrolatum tape wrapping; Compatible protective outer layer selected for exposure and mechanical conditions.

Outcome. The cold-applied method enabled local maintenance around pipeline surfaces and irregular details without hot work or lengthy curing.

Project conditions, surface preparation, system components and operating environments vary. A reference demonstrates application experience; it does not replace project-specific technical review or the current product data sheets.

Supporting documents

- Petrolatum Anti-Corrosion Tape — Industrial Grade TDS
- Microcrystalline Wax Anti-Corrosion Tape TDS
- Tape primer and sealing mastic TDS (P100 / P200 / M100)
- Aluminium Foil Outer Wrap Tape TDS
- Test reports J25C12220188BR, CBT30406071071

TECHNICAL & COMMERCIAL CONTACT

Send us your asset information

Send asset photographs, dimensions, operating temperature and exposure conditions. We will return a system configuration, an estimated material quantity and the supporting documents.

- Product and system selection
- Technical data sheets and safety data sheets
- Third-party test reports and certificates
- Installation sequence and application guidance
- Samples, packaging and private-label discussion

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Manufacturing	Manufacturing facilities in Anhui and Tianjin, China

DISCLAIMER

The information in this document is based on Zhuohuang product records, manufacturer data and third-party test reports available at the date of issue. Values are typical or standard configurations and are not universal acceptance limits. Product performance depends on substrate condition, surface preparation, geometry, operating temperature and exposure. Confirm the applicable grade, current packaging, project acceptance criteria and the relevant safety data sheet before order and application.