

APPLICATION SOLUTION 02

Valves, Flanges and Buried Fittings

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

2018

China Gas programme start

3

City networks

55 %

Minimum overlap

Cold

Applied



01 The Problem

Valve, Flange and Fitting Protection

Valves, flanges, bolt clusters and small fittings are the details a paint system cannot reach. Film thickness cannot be controlled around a bolt head; crevices between mating faces stay wet; and buried valve chambers fill with rainwater or groundwater, so the assembly spends part of its life submerged. The result is corrosion concentrated exactly where the asset is operated and where seizure is most expensive.

Corrosion risk

- Crevice corrosion between flange faces, under bolt heads and inside chamber penetrations.
- Standing water in valve chambers, alternating with drying cycles.
- Loss of coating film thickness on edges, threads and sharp geometry.
- Seized stems and fasteners, making planned operation and isolation impossible.
- Difficult access — the asset often cannot be removed for shop coating.



Valve chamber before wrapping



Wrapping in progress



Completed valve and flange system

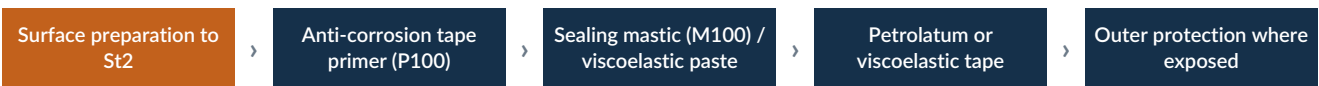
02

Recommended System

Why this configuration

A wrapping system treats the assembly as a whole rather than as a surface. Paste or mastic is pressed into every crevice so there is no void left to hold water; the tape then encapsulates the complete assembly including bolts and stem. Because nothing cures and nothing is heated, the work can be done in a live chamber, in wet conditions, by ordinary site labour – and the wrap can be cut open for inspection and re-applied.

System structure



Product combination and application procedure

Stage	Product	Procedure
Prepare	—	Remove loose rust and contamination from the valve body, flanges, bolts and adjacent pipe. St2 level. Displace standing water.
Prime	Anti-corrosion tape primer (P100)	Brush or gloved-hand application over the whole assembly, worked into threads, crevices and pitting.
Profile	Lightweight sealing mastic (M100) or viscoelastic paste	Press into gaps between flange faces, behind bolt heads and around the stem. Build smooth transitions so the tape is not bridged.
Seal	Petrolatum tape (100 mm typical) or viscoelastic tape	Wrap the body, flanges and adjacent pipe with a minimum 55 % overlap, working from one side to the other without leaving a channel.
Protect	Aluminium foil outer wrap or mechanical cover	Apply where the assembly is exposed to sunlight or mechanical traffic.

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	Above-ground valves and flanges in direct sunlight, and for a clean maintainable finish.
PE outer wrap	Buried valve chambers and covered assemblies.
PP fibre-reinforced outer wrap	Where the assembly is backfilled directly or exposed to mechanical traffic.

03

Key Benefits and Evidence

What the customer gets, and what supports it

- Complete encapsulation of an irregular assembly, including fasteners.
- Can be applied in a wet chamber and to damp steel.
- No hot work — suitable for gas networks and hazardous areas.
- Cut open, inspect and re-wrap without removing the valve.
- Compatible with continued operation of the valve stem.
- Viscoelastic option gives zero-VOC, primer-free application where site conditions require it.

Typical applications

- Buried valves, chambers and pits in gas and water networks
- Pumps, strainers and small fittings in humid plant areas
- Flanged joints and bolted connections on process pipework
- Nozzle and penetration details on tanks and vessels

Field reference

CHINA GAS · NANJING / HANGZHOU / YANGZHONG, CHINA

Asset	Buried valves and flanges in valve chambers
System	Petrolatum primer + mastic + tape
Reference	In use since 2018

Challenge. Valve chambers accumulate rainwater or groundwater. Conventional paint films deteriorate when valves, flanges and fasteners remain wet or are periodically submerged, while complex shapes create difficult coating details.

System applied. Remove loose rust and contamination; Apply petrolatum primer; Profile recessed areas with mastic; Wrap petrolatum tape with controlled overlap; Smooth joints and eliminate voids.

Outcome. The wrapping system has been used in China Gas valve chambers since 2018. The flexible, water-displacing system supports continued protection where valve assemblies are exposed to chamber water ingress and difficult maintenance access.

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
- Anti-Corrosion Tape Primer TDS
- Lightweight Sealing Mastic TDS
- Viscoelastic Anti-Corrosion Tape and Paste TDS
- Test reports CTICAQ4512401550823164BR, CTG2410221378A_SR180AC

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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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.