

TECHNICAL STANDARD

**THE PROTECTION OF DUCTILE IRON AND
CAST IRON PIPEWORK AND FITTINGS IN
BELOW GROUND PIPELINES USING
PETROLATUM TAPE WRAPPING SYSTEM**



Issued by: Manager Engineering

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APPROVAL TO DEVIATE FROM THIS STANDARD

Approval may be granted by the Asset Owner to deviate from the requirements as stipulated in this Standard if the functional requirements (e.g. Asset Life) for the asset differs from those stated in the Standard, but is assessed as still being acceptable by the Asset Owner's nominated representative.

Any approval to deviate from the stated requirements of this Standard will not be seen as creating a precedent for future like project. Any request to deviate from this Standard must be carried out on a project by project basis where each alternate proposal will be individually assessed on its own merit.

CHANGE HISTORY

The following lists the major changes to the February 2004 edition and published in the September 2007 edition of TS 29:

1. Reformatted from DS to TS (Departmental Standard to Technical Standard), and updated referenced Australian Standards.
2. Conversion to a technical standard by removal of contractual conditions (to be included in the contract that references this standard).
3. Removal of the word "Denso" from the title of the standard.

Changes to 27 June 2011 edition.

1. System B Petro Coating Systems added. Specific references to Denso removed.
2. Minor editorial changes.

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REFERENCED DOCUMENTS

TS 81: The protection of field joints and specials and repair of coatings on
below ground steel pipelines using bitumen mastic tapes and
compounds

SECTION 1: SCOPE

This Technical Standard (TS) details the surface preparation and application of petrolatum protective tape wrapping system on cast iron and ductile iron pipes and fittings for below ground pipelines. Fittings may also include brass and other ancillary fittings that have been specified to be protected by this system. Petrolatum protective tape wrapping may also be used for repairs to old existing coal tar enamel coated pipelines (where good surface preparation is not practical) with the approval of SA Water's Representative.

Note: This system is not intended for use on steel pipes coated with high performance protective coatings such as fusion bonded polyethylene (Sintakote) which is specified in TS 81.

The complete system consists of the following authorised products:

System A Denso

- | | | |
|----------------|---|----------------------------------|
| • Primer | - | Denso Multi Purpose Primer (300) |
| • Mastic | - | Denso Mastic (400) |
| • Tape | - | Denso Tape (600) |
| • PVC Overwrap | - | Denso MP/HD Tape (931) |

System B* Petro Coating Systems

- | | | |
|------------|---|--------------------------------|
| • Primer | - | PetroGard Petrolatum Primer |
| • Mastic | - | PetroGard Petrolatum Mastic ST |
| • Tape | - | PetroGard Petrolatum Tape ST |
| • Overwrap | - | PetroGard PVC Overwrap Tape |

* Note that System B has been granted Interim approval on 27 June 2011. If this product is utilised, contact the SA Water Materials Science Unit to assist with record keeping until final approval is granted.

SECTION 2: QUALIFICATIONS

Applicators shall have completed appropriate competency based training (ie training course) approved by SA Water prior to the application of the authorised products.

2.1 SA Water's Representative

SA Water's Representative in this Technical Standard will be nominated by SA Water.

SECTION 3: PIPEWORK (Straight Sections)

3.1 Surface Preparation

All dirt, rust, etc shall be removed from the bare metal by hand or power tool cleaning (minor tightly adherent rust and sound adherent protective coatings may remain). All surfaces to be wrapped shall be wiped down using a clean dry rag to remove any moisture and remaining dust.

If applying to coal tar enamel coated pipe all raised lumps shall be removed and any unsound portions of the coating cut back 20 millimetres into sound coating. All surface contamination shall be removed by wire brushing for a distance of 100 millimetres back onto the original coating.

3.2 Priming

Approved Primer shall be applied by gloved hand or brush in a thin even film over the entire prepared surface, commencing underneath the pipe. If the pipe is coal tar enamel coated the primer shall extend 100 millimetres onto the sound coating. The primer shall be rubbed well into the metal to displace any surface moisture.

3.3 Mastic Filling (if required)

To improve the contours for wrapping of the tape, any rough, sharp, angular or recessed areas (including the edge of coal tar enamel coating) shall be filled and profiled with approved Mastic to provide a smooth even surface in preparation for application of the tape. At the completion of profiling, the profile should be such that the Tape can be applied without bridging and shall not allow the Tape to be perforated by an angular projection.

3.4 Tape Wrapping

One complete turn of 150 millimetres wide Tape shall be applied with the heavy compound side towards the pipe. The pipe shall then be spirally wrapped using a 55% overlap and finished with one complete turn around the pipe. Maintain a firm tension while wrapping to minimise wrinkling. The tape shall be cut off in the downward direction of wrapping. During wrapping the tape shall be smoothed out by gloved hand to exclude any air bubbles or wrinkles, and also to seal overlaps.

If it is to be applied on coal tar enamel coated pipe the Tape shall commence 100 millimetres back onto the primed coal tar enamel and finish 100mm onto the primed coal tar enamel.

Care shall be taken to prevent any folds or misplacement of the tape, especially under the pipe and to prevent the tape becoming contaminated during wrapping. Care shall also be taken to avoid over stretching the tape.

3.5 Over Wrapping

150mm wide PVC Overwrap Tape shall be spirally wrapped over the Tape using a 55% overlap and the method as described in Clause 3.4. Narrower Overwrap Tape can be used if necessary. While wrapping, the Tape shall be pulled firmly and overlaps properly sealed.

SECTION 4: BENDS, BRANCHES, FITTINGS AND FLANGES

4.1 Surface Preparation

All dirt, rust, etc shall be removed from the bare metal by hand or power tool cleaning (light tightly adherent rust and sound adherent protective coatings may remain). All surfaces to be wrapped shall be wiped down using a clean dry rag to remove any moisture and remaining dust.

If applying to coal tar enamel coated pipe all raised lumps shall be removed and any unsound portions of the coating cut back 20 millimetres into sound coating. All surface contamination shall be removed by wire brushing for a distance of 100 millimetres back onto the original coating.

4.2 Priming

Approved Primer shall be applied by gloved hand or brush to the fittings and flanges in a thin even film over the entire prepared surface. Primer shall also be applied to bolts, nuts and threads. If the pipe is coal tar enamel coated the primer shall extend 100 millimetres onto the sound coating. The primer shall be rubbed well into the metal to displace any surface moisture.

4.3 Mastic Filling (if required)

4.3.1 General

Mastic shall be applied to all sharp angles, depressions, bolts, nuts, etc. on fittings to improve contours for subsequent tape wrapping. At the completion of profiling, the profile should be such that the Tape can be applied without bridging and shall not allow the Tape to be perforated by an angular projection.

4.3.2 Flanges

Mastic shall be applied over the heads of the bolts and on the flange face, moulding the mastic to give a minimum coverage of 5 millimetres over bolts and to provide a suitable contour for tape wrapping which will prevent formation of air gaps beneath the tape. A similar application shall be made over the nuts and protruding threads on the other side of the flange.

4.4 Tape Wrapping

4.4.1 Fittings

Fittings shall be wrapped with 150 millimetre wide Tape using a 55% overlap where possible. Narrower tape may have to be used with tight radius bends and short branches. Maintain a firm tension while wrapping to minimise wrinkling. During wrapping the tape shall be smoothed out by gloved hand to exclude any air bubbles or wrinkles and to seal any overlaps.

4.4.2 Flanges

Two complete turns of 150 millimetre wide Tape shall be wrapped circumferentially around the flange so that the tape just covers the flange edge. The end lap shall be 75 millimetres and finished in a downward direction. The tape shall then be moulded over the flange (and mastic filler) and down onto the pipe surface. Tape shall then be applied in a similar manner on the opposite side providing a double thickness of tape over the whole flange. Continuous tape wrapping over a flange is also acceptable provided at least two complete layers of tape cover all surfaces.

4.5 Over Wrapping

4.5.1 Fittings/Flanges

Fittings and flanges shall be wrapped with 150 millimetre wide PVC Overwrap Tape to completely encapsulate the previously applied Tape. Narrower Overwrap Tape may be used if necessary. While wrapping, the Overwrap Tape shall be pulled firmly and the laps properly sealed.

SECTION 5: ADDITIONAL INFORMATION

Additional specific information relating to the wrapping of valves, gibault joints etc and the quantities required are available from Denso (Australia) Pty Ltd or Petro Coating Systems Pty Ltd.