

Water Supply

**CORROSION
PROTECTION**

Section WO 05

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WO 05-S1 POLYETHYLENE SLEEVING FOR DI PIPE AND FITTINGS

STANDARD	AS 3680:1989 Polyethylene sleeving for ductile iron pipelines AS 3681:1989 Guidelines for the application of polyethylene sleeving to ductile iron pipe & fittings																																																						
DRAWING	W1-2-17A Mainlaying application of sleeving for corrosion protection of DI CL pipes W1-2-17B Mainlaying application of sleeving for corrosion protection of DI CL fittings																																																						
DESIGN	Polyethylene sleeving of ductile iron pipelines is intended to prevent surrounding aggressive soils/groundwater contacting the pipeline and causing corrosion. Free flow of ground water within the sleeving is not acceptable and would not be expected occur with properly installed sleeving. The effectiveness of sleeving is not impaired by the presence of condensate or small amounts of water that may be trapped within the sleeve.																																																						
MATERIAL	Non-regenerated linear low density polyethylene (nominal melt flow index of 1.0 max)																																																						
DIMENSIONS	<table border="0"> <thead> <tr> <th rowspan="2">Nominal size</th> <th colspan="2">Layflat tube width (mm)</th> <th rowspan="2">Nominal size</th> <th colspan="2">Layflat tube width (mm)</th> </tr> <tr> <th>Pipes</th> <th>Flanged fittings</th> <th>Pipes</th> <th>Flanged fittings</th> </tr> </thead> <tbody> <tr> <td>80 or 100</td> <td>350</td> <td>425</td> <td>375</td> <td>875</td> <td>875</td> </tr> <tr> <td>150</td> <td>425</td> <td>425</td> <td>450 or 500</td> <td>1100</td> <td>1100</td> </tr> <tr> <td>225 or 250</td> <td>635</td> <td>635</td> <td>600</td> <td>1270</td> <td>1270</td> </tr> <tr> <td>300</td> <td>725</td> <td>725</td> <td>750</td> <td>1500</td> <td>1500</td> </tr> </tbody> </table> <p>Thickness: 200 µm minimum ± 20 µm</p> <table border="0"> <thead> <tr> <th>Nominal size</th> <th>Sleeves per roll</th> <th>Nominal size</th> <th>Sleeves per roll</th> </tr> </thead> <tbody> <tr> <td>80 or 100</td> <td>30</td> <td>375</td> <td>12</td> </tr> <tr> <td>150</td> <td>25</td> <td>450 or 500</td> <td>10</td> </tr> <tr> <td>225 or 250</td> <td>17</td> <td>600</td> <td>8</td> </tr> <tr> <td>300</td> <td>15</td> <td>750</td> <td>7</td> </tr> </tbody> </table>	Nominal size	Layflat tube width (mm)		Nominal size	Layflat tube width (mm)		Pipes	Flanged fittings	Pipes	Flanged fittings	80 or 100	350	425	375	875	875	150	425	425	450 or 500	1100	1100	225 or 250	635	635	600	1270	1270	300	725	725	750	1500	1500	Nominal size	Sleeves per roll	Nominal size	Sleeves per roll	80 or 100	30	375	12	150	25	450 or 500	10	225 or 250	17	600	8	300	15	750	7
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COLOUR	Water – Blue, Recycled Water - Purple																																																						
MARKING	<table border="0"> <tr> <td>Manufacturer's name</td> <td>Applicable standard</td> </tr> <tr> <td>Date of manufacture (mm/yyyy)</td> <td>Number of sleeves per roll (on packaging)</td> </tr> <tr> <td>Nominal pipe size</td> <td>Batch (not in AS 3680)</td> </tr> </table>	Manufacturer's name	Applicable standard	Date of manufacture (mm/yyyy)	Number of sleeves per roll (on packaging)	Nominal pipe size	Batch (not in AS 3680)																																																
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USE LIMITS	Do not use unrolled lengths of sleeving stored unprotected from sunlight for more than 7 days.																																																						

WO 05-S2 ADHESIVE TAPE FOR SECURING POLYETHYLENE SLEEVING

STANDARD	AS 3680:1989 Polyethylene sleeving for ductile iron pipelines AS 2400.12:1985 SAA Packaging code Part 12: Adhesive closing and sealing tapes				
DESIGN	Pressure sensitive adhesive tape for securing polyethylene sleeving is to have: <ul style="list-style-type: none"> • minimum adhesion to steel of 10N for 25mm of width • minimum breaking strength: 130N for 25mm of width 				
MATERIALS	PVC, polypropylene or polyethylene				
DIMENSIONS	<table border="0"> <tr> <td>Width:</td> <td>48 mm minimum</td> </tr> <tr> <td>Thickness:</td> <td>As appropriate to achieve minimum breaking strength</td> </tr> </table>	Width:	48 mm minimum	Thickness:	As appropriate to achieve minimum breaking strength
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WO 05-S3 STRAP & BUCKLE FOR SECURING POLYETHYLENE SLEEVING

STANDARD	AS 3680:1989 Polyethylene sleeving for ductile iron pipelines				
DESIGN	<table border="0"> <tr> <td>The strap is to have: <ul style="list-style-type: none"> • minimum breaking strength of 500N • maximum elongation of 5% at breaking </td> <td>The strap buckle is to: <ul style="list-style-type: none"> • be of sufficient size and shape to accommodate appropriate strapping • allow tension of strap to be maintained. </td> </tr> </table>	The strap is to have: <ul style="list-style-type: none"> • minimum breaking strength of 500N • maximum elongation of 5% at breaking 	The strap buckle is to: <ul style="list-style-type: none"> • be of sufficient size and shape to accommodate appropriate strapping • allow tension of strap to be maintained. 		
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MATERIALS	Polypropylene or other material with similar chemical properties.				
DIMENSIONS	<table border="0"> <tr> <td>Strap Width:</td> <td>15 mm minimum</td> </tr> <tr> <td>Strap Thickness:</td> <td>0.3 mm minimum</td> </tr> </table>	Strap Width:	15 mm minimum	Strap Thickness:	0.3 mm minimum
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WO 05-S4 PETROLATUM TAPE SYSTEM

STANDARD	DIN 30672	Coatings of Corrosion Protection Tapes and Heat Shrinkable Material for Pipelines		
DESIGN	The petrolatum system comprises four parts being 1) primer paste, 2) mastic, 3) petrolatum tape and 4) overwrap tape. The primer paste is first applied to surfaces free of water droplets and loose rust, scale, mud, paint etc. The mastic is then used to contour all sharp and irregular profiles to prevent bridging and subsequent perforation or tearing of overlying tape. Petrolatum tape having the heavy compound side down is then spirally wound about components without stretching. Tape is overlapped 55% for consistent full double thickness and tape is smoothed by hand to remove voids, ensure intimate contact and seal the tape overlaps. Finally the overwrap plastic tape is spirally wound without stretching to achieve 55% overlap for consistent double thickness. Overwrap provides mechanical protection against backfill, stray electrical current and leaching.			
MATERIALS	Primer paste:	Petrolatum (saturated petroleum based hydrocarbons), inert fillers and passivating agents		
	Mastic:	Petrolatum (saturated petroleum hydrocarbons), inert fillers, reinforcing synthetic fibres		
	Petrolatum tape:	Non-woven synthetic fabric, fully impregnated and coated with neutral petrolatum based compounds and inert fillers		
	Overwrap tape:	Plasticised PVC coated with a rubber based adhesive		
DIMENSIONS	Petrolatum tape widths:	50, 75, 100, 150, 200 mm		
	Overwrap tape widths:	50, 100, 150 mm		
MASTIC COVERAGE	Nominal size	Flanges pair (kg)	Nominal size	Flanges pair (kg)
	80	2.15	300	8.65
	100	2.85	375	10.6
	150	4.30	450	12.85
	200	5.70	500	14.30
	225	6.50	600	17.25
	250	7.25	750	21.35
	Note: the above quantities are approximate only and depend upon application conditions			
PACKAGING	Primer paste:	Tins, boxes or drums		
	Mastic:	Blocks		
	Primary Tape	Rolls		
	Overwrap Tape	Rolls		
PACKAGING MARKING	Manufacturer's name or trademark			
MARKING METHOD	Legible and durable marking			
USE LIMITS	For bolted joints with bituminous coatings (e.g. flanged joints, gibault joints, dismantling joints using galvanised bolts Do not use where stainless steel bolts are used Do not use to wrap welded joints of steel pipe having polyethylene coating, e.g Sintakote.			

WO 05-S5 BITUMEN TAPE SYSTEM

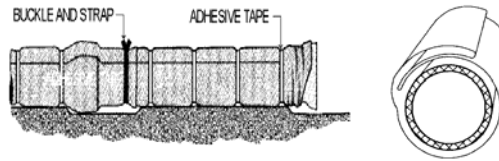
STANDARD	AWWA C209 Cold Applied Tape Coatings for the Exterior of Special Sections, Connections and Fittings for Steel Water Pipelines DIN 30672 Coatings of Corrosion Protection Tapes and Heat Shrinkable Material for Pipelines
DESIGN	<p>The bitumen tape system comprises of three parts being 1) primer liquid, 2) mastic strip, 3) tape. The primer paste is first applied to surfaces free of water droplets and loose rust, scale, mud, paint etc. The mastic is then used to contour all sharp and irregular profiles to prevent bridging and subsequent perforation or tearing of overlying tape. Tape having the heavy compound side down is then spirally wound about components without stretching. Tape is overlapped 55% for consistent full double thickness and tape is smoothed by hand to remove voids, ensure intimate contact and seal the tape overlaps.</p> <p>For specific requirements, such as the field repair of Sintakote coatings, an overwrap tape can be added to the bitumen tape system.</p>
MATERIALS	<p>Primer liquid: High softening point bitumen liquid hydrocarbon Mastic strip: Permanent plastic mastic Primary Tape: Non-woven synthetic fabric, fully impregnated and coated with neutral petrolatum based compounds and inert fillers Secondary Tape (where applied): Plasticised PVC coated with a rubber based adhesive</p>
DIMENSIONS	<p>Mastic strip widths: 50, 100 mm Primary Tape widths: 50, 100, 150 mm Secondary Tape widths: 50, 100, 150 mm</p>
PACKAGING	<p>Primer paste: Tins or drums Mastic: Rolls Primary Tape Rolls Secondary Tape Rolls</p>
PACKAGING MARKING	Manufacturer's name or trademark
MARKING METHOD	Legible and durable marking
USE LIMITS	<p>For bolted joints with bituminous coatings (e.g. flanged joints, gibbault joints, dismantling joints using galvanised bolts Do not use where stainless steel bolts are used</p>

WO 05-S6 POLYOLEFIN HEAT SHRINK SLEEVES

STANDARD	AWWA C216	Heat Shrinkable Cross Linked Polyolefin Coatings for the Exterior of Special Sections, Connections and Fittings for Steel Water Pipelines		
	DIN 30672	Coatings of Corrosion Protection Tapes and Heat Shrinkable Material for Pipelines		
DESIGN	Heat shrink sleeves are used for external corrosion protection of steel pipelines. They are used to protect exposed steel at joints after welding and to repair damaged external polyethylene or fusion bonded epoxy coatings on steel pipes or fittings. Heat shrink sleeves consist of two layers; a cross linked polyethylene sleeve which, when heated, shrinks to a predetermined dimension; and a heat sensitive corrosion protective adhesive pre-applied to the polyethylene sleeve, which softens on heating to adhere to the steel and prevent contact of steel with water.			
MATERIALS	Sleeve:	Irradiated and cross linked oriented impermeable polyethylene		
	Adhesive coating on sleeve:	Mastic type heat activated adhesive which forms a protective layer to prevent the ingress of water		
SLEEVE WIDTH	300, 450, 600, 900 mm			
BACKING THICKNESS	Minimum backing thickness of 0.75mm (as supplied and not fully recovered) for use with Tyco Sintakote MSCL pipe			
SLEEVE LENGTH	Nominal size	Typical Length (mm)	Nominal size	Typical Length (mm)
	80	355	300	1155
	100	460	375	1350
	150	660	450	1600
	200	825	500	1750
	225	925	600	2095
	250	1005	750	2605
STORAGE	Store in manufacturer's original packaging and leave unopened until required use Store in dry ventilated area Avoid exposure to direct sunlight, rain, dust or other adverse environments Avoid prolonged storage to temperatures above 35°C			
PACKAGING MARKING	Manufacturer's name or trademark Product name and identification codes Batch or lot number Date of manufacture			

EXTERNAL PROTECTION

POLYETHYLENE SLEEVING SYSTEM



Nominal Size DN	Tyco Water (BlueBoss)
80	✓
100	✓
150	✓
200	✓
225	✓
250	✓
300	✓
375	✓
450	✓
500	✓
600	✓
750	✓

PETROLATUM TAPE SYSTEM



Denso^{1,2}
✓

NOTES

1. This system comprises Denso Multi-Purpose Primer, Denso Tape with a minimum of 55% overlap and Denso MP/HD Tape with a minimum of 55% overlap. Use Denso Mastic as necessary to contour sharp or irregular profiles.
2. Denso Mastic and Denso Tape have a maximum service temperature of 55C. For higher service temperatures to 75C, use Densyl Supersoft Mastic and Densyl Tape.

**BITUMEN TAPE SYSTEM
(WELDED JOINTS ON PE COATED STEEL PIPE)**



Denso^{1,2,3}
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NOTES

1. This system comprises Denso Primer D and Denso Ultraflex 1500 tape with a minimum of 55% overlap. Use Densopol Mastic strip as necessary to contour sharp or irregular profiles.
2. For Sintakote repairs, the use of an overwrap tape, Denso MP/HD, is recommended by Tyco in addition to the system described at Note 3 above. The overwrap tape should be installed with a minimum overlap of 10%.
3. For Sintakote repairs, a butyl rubber based primer, Densolen HT Primer can be used with this system in place of Denso Primer D.

POLYOLEFIN HEAT SHRINK SLEEVE
(FOR REPAIRS & WELDED JOINTS ON SINTAKOTE STEEL
PIPELINES)

Denso
(Canusa Wrapid
KLS Sleeve)

I

I = Interim Approval
NOTES

1. Average service temperature should be less than 30C. Maximum service temperature 45C.