



# GUARDIAN PETROLATUM AND BITUWRAP TAPE SYSTEMS

Multi Environment Corrosion Protection System

GUARDIAN  
PETROLATUM SYSTEMS



GUARDIAN  
BITUWRAP SYSTEMS



**GUARDIAN**  
PROTECTIVE COATINGS

**SPAN**  
Suruhanjaya Perkhidmatan Air Negara

# ABOUT OUR PRODUCTS

**GUARDIAN** PETROLATUM SYSTEMS & **GUARDIAN** BITUWRAP SYSTEMS



## **GUARDIAN** Petrolatum Systems

Guardian Petrolatum Systems is a corrosion protection tape system based on a synthetic carrier fully impregnated with an anti-corrosive petrolatum mass.

Petrolatum tape products provide above and below ground and underwater (Petrolatum MT Tape only) protection to pipelines, fittings, appurtenances, tank bases, steel structures and many more.

## **GUARDIAN** Bituwrap Systems

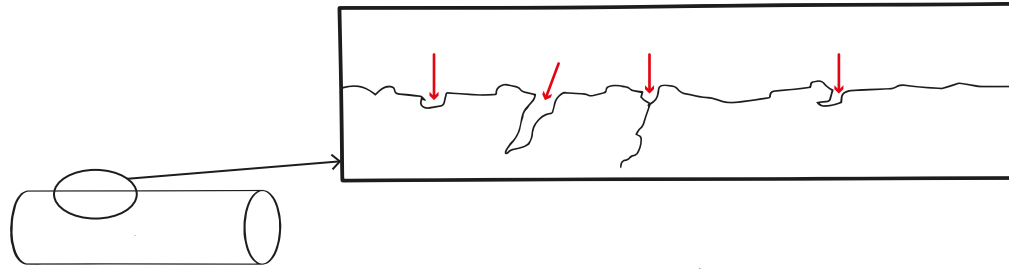
Guardian Bituwrap Systems is a high performance adhesive tapes for above ground and below ground pipeline corrosion protection, weld joints, fittings, fabrications and repair of geomembranes. Our PVC / Bitumen tapes are conformable & robust, built for adhesive corrosion protection and designed for use in mainly temperate climatic conditions. They work best for the corrosion protection of pipelines, joints, welds, bends, culverts and fittings.



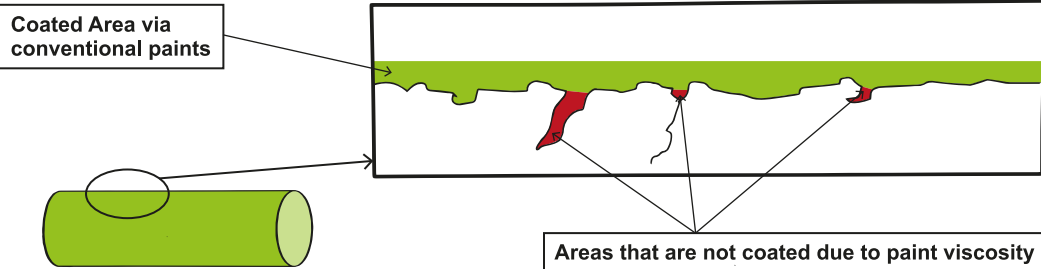
# CORROSION PREVENTION

## Barrier Separation via coating materials

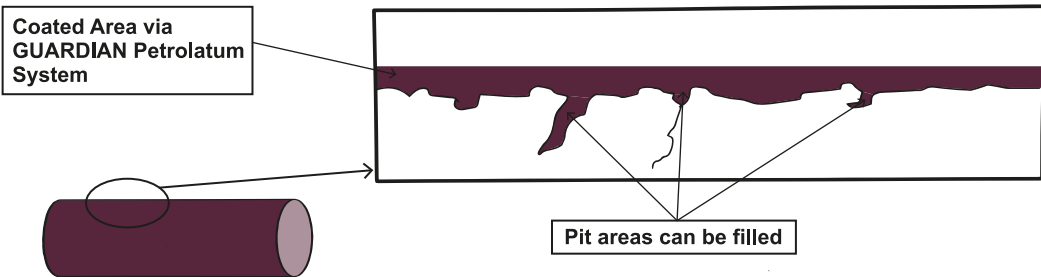
Diagram below shown a corroded metal surface. Corroded Metal causes uneven surfaces most of the time. Therefore, surface preparation is required based on type of coating to be applied. Guardian System only requires minimum surface preparation of ST2 (Hand Tool Cleaning) to remove light or loose rust scales.



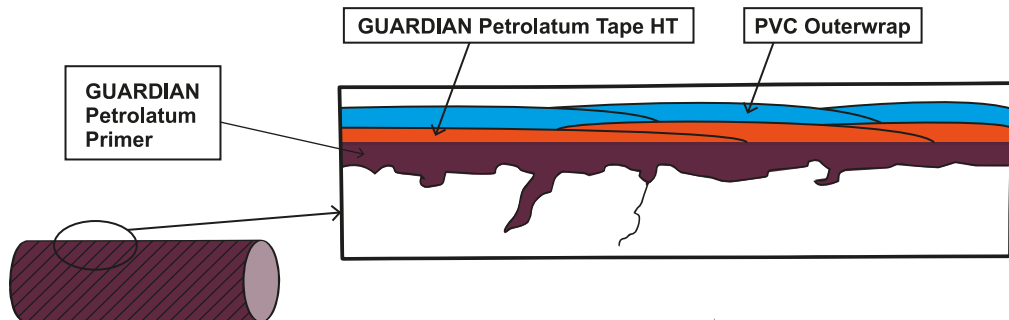
Failure in selecting the right material leads to further damages on structures.



Guardian Petrolatum system has the flexibility to conform in most criteria and ease of installation.



The diagram below shows GUARDIAN Petrolatum complete system.



# GUARDIAN Petrolatum Systems

## Product Features & Advantages

### **GUARDIAN** Petrolatum Systems Products are a true “ Surface Tolerant Coating System ”

- Minimal Surface Preparation - Hand Tool Clean (St2 – ISO 8501-1:1988)
- Application to Wet and / or Cold conditions
- Highly conformable to irregular surface profiles (Valves, Flanges, etc.)
- Excellent encapsulation anti-corrosion coatings
- Unlimited Shelf Life
- Long Term Service Life – 30+ Years
- Operating / Application Temperature : -10°C to +75°C
- Non skilled labour can apply system
- No requirement for specialised equipment
- No curing time
- Product remains inert
- Protection based upon encapsulation rather than adherence to a substrate
- Can be applied to “sweating pipes”
- No Pin Holes!
- Application under water (MT)
- Mechanical Protection with PVC Overwrap (Buried) or HD-GW Glasswrap (Above ground)
- Manufactured according to AWWA C217



# GUARDIAN Petrolatum Systems

## Typical Applications

- Pipelines, Utilities
- Pipeline Fittings (Valves, Elbows, Tees, etc.)
- LNG/LPG Pipelines (Sweating Lines)
- Water Cooling Towers (Sweating Lines)
- Encapsulation
- Industrial Plants in Coastal Regions – Wharf Pipelines
- Gas (Petrol) Stations – Buried Pipework
- Pipework on Shipping
- Pipe & Pipe Hangers
- Sealing of Pipe Casings / Conduit
- Heavy Vehicle Protection in Highly Corrosive Environments
- Vehicle Protection - Salt Mines
- Storage of Milled Surfaces
- Cable & Guy Wire Anchors
- Waterproofing & Sealing
- Cable Splices & Cadwelds
- Irrigation Systems
- Surface Mounted Buried LPG Bullets
- Areas of Restrictive Surface Preparation
- Areas of Premature Paint Breakdown



# GUARDIAN Petrolatum Systems

## Multi Environment Corrosion Protection System

The GUARDIAN Petrolatum Range consists of the following products:

### 1 GUARDIAN Petrolatum Primer

GUARDIAN Petrolatum Primer is applied by gloved hand or brush to fill minor surface imperfections and coat the area to be wrapped. Allow for a spread rate of 3-5m<sup>2</sup>/kg.

### 2 GUARDIAN Petrolatum Mastic HT

All sharp angles and voids are to be contoured with GUARDIAN Petrolatum Mastic HT. Features should be profiled sufficiently so that the GUARDIAN Petrolatum Tape may be applied without any bridging or risk of the GUARDIAN Petrolatum Tape being perforated in service by any angular projection.

### 3 GUARDIAN Petrolatum Tape HT

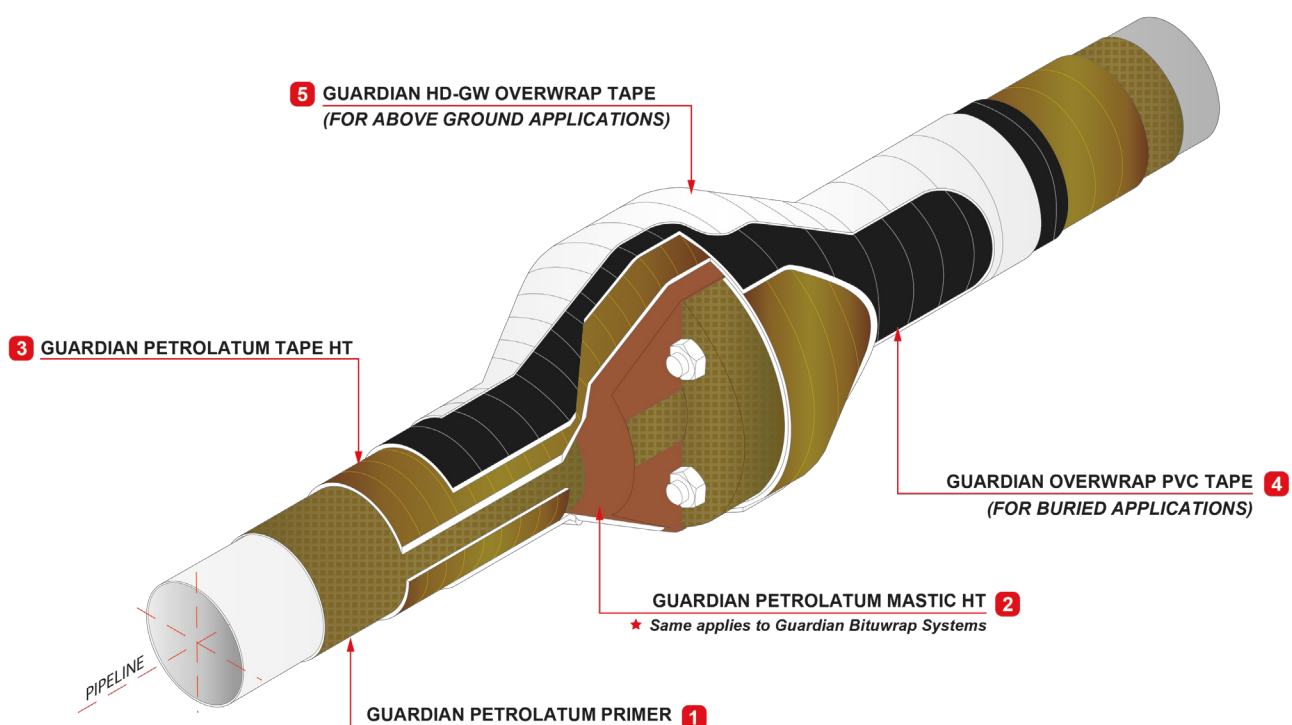
GUARDIAN Petrolatum Tape is normally applied spirally with a 55% overlap resulting in a double thickness of tape being applied in a single motion. Firm tension should be applied while wrapping to minimise wrinkling. Smooth tape over with a gloved hand while wrapping. Pay extra attention to the overlaps, smoothing the edge of the tape and affectively creating a seal between layers (Refer to the GUARDIAN Petrolatum Quantity Estimate Sheet - Continuous Wrapping to select a suitable tape width for the pipe diameter to be wrapped.)

### 4 GUARDIAN Overwrap PVC Tape

GUARDIAN Petrolatum PVC Overwrap is applied spirally with a 55% overlap resulting in a double thickness of tape being applied in a single motion. Firm tension should be applied while wrapping to minimise wrinkling. (Refer to the GUARDIAN Petrolatum Quantity Estimate Sheet - Continuous Wrapping to select a suitable tape width for the pipe diameter to be wrapped.)

### 5 GUARDIAN HD-GW (Glasswrap) Overwrap Tape

Where exposed to UV, apply GUARDIAN HD-GW Overwrap Tape. GUARDIAN HD-GW Overwrap Tape protects the GUARDIAN Petrolatum against UV and is applied spirally with a 55% overlap.



# GUARDIAN Petrolatum Primer (ST)

GUARDIAN Petrolatum Primer is a key component of the GUARDIAN Petrolatum System.

GUARDIAN Petrolatum Primer is a Petrolatum Compound incorporating inert fillers and corrosion inhibitors.

GUARDIAN Petrolatum Primer is manufactured in accordance with AWWA Standard C217-2016.

GUARDIAN Petrolatum Primer is inert. Stable in nature, GUARDIAN Petrolatum Primer maintains its plasticity over a wide temperature range.

GUARDIAN Petrolatum Primer profiles minor surface imperfections and enables uniform adhesion of GUARDIAN Petrolatum Mastic and GUARDIAN Petrolatum Tape to a clean substrate.



## PROPERTIES

Property	Test Method	Value
• Flash Point	ASTM D92	180°C
• Specific Gravity	ASTM D70 @ 25°C (Mod)	1.1 (Average)
• Drop Melting Point	ASTM D127 (Mod)	55°C
• Cone Penetration at 25°C, 100g wt, 5 sec; mm	ASTM D937 (Mod)	15mm (Average)
• Petrolatum Content		75% Min by Weight
• Coverage		5m <sup>2</sup> /kg (Average)
• Application Temperatures	-10 to + 50°C	
• Service Temperatures	-10 to + 75°C	
• Service Life	30 Years+	
• Shelf Life	30 Years+	

## PACKAGING

Part No.	Weight	Unit	Carton Qty
• PP04ST	4kg	Tub	2 Tubs/Carton
• PP20ST	20kg	Drum	1 Drum

Other sizes are available on an indent basis.

## PURPOSE

Protects against corrosion Above and Below Ground on Pipes and Pipe Fittings, Tie Rods, and Other Applications.

# GUARDIAN Petrolatum Mastic HT ( High Temperature)

GUARDIAN Petrolatum Mastic HT is a key component of the GUARDIAN Petrolatum System.

GUARDIAN Petrolatum Mastic HT is a blended reinforced petrolatum. Incorporating inert fillers, GUARDIAN Petrolatum Mastic HT also contains corrosion inhibitors and thermal extenders.

GUARDIAN Petrolatum Mastic HT is inert, being stable in nature and maintaining its plasticity over a wide temperature range.

GUARDIAN Petrolatum Mastic HT profiles crevices and sharp angles enabling GUARDIAN Petrolatum Tape HT to be applied without bridging or voiding.



## PROPERTIES

Property	Test Method	Value
• Flash Point	ASTM D92	180°C
• Specific Gravity	ASTM D70 @ 25°C (Mod)	1.1 (Average)
• Drop Melting Point	ASTM D127 (Mod)	75°C
• Volume per block*		.003m <sup>3</sup>
*Note that the quantity of mastic required is applicator dependent. Confirmatory trials should be conducted where possible to determine requirements.		
• Application Temperature	-10 to + 50°C	
• Service Temperature	-10 to + 75°C	
• Service Life	30 Years +	
• Shelf Life	30 Years +	

## PACKAGING

Part No.	Weight	Unit	Carton Qty
• PM03HT	3kg	Block	8 Blocks/Carton

Other sizes are available on an indent basis.

## PURPOSE

Protects against corrosion Above and Below Ground on Pipes and Pipe Fittings, Tie Rods, and Other Applications.

# GUARDIAN Petrolatum Tape HT ( High Temperature)

GUARDIAN Petrolatum Tape HT is a key component of the GUARDIAN Petrolatum System.

GUARDIAN Petrolatum Tape HT is a Non Woven polyester fabric fully impregnated and saturated with Petrolatum Compound. Incorporating inert fillers, GUARDIAN Petrolatum Tape HT also contains corrosion inhibitors and thermal extenders.

GUARDIAN Petrolatum Tape HT is manufactured in accordance with AWWA Standard C217-2016.

GUARDIAN Petrolatum Tape HT will not polymerise or oxidise. Its non-hardening properties allow the product to accommodate both substrate vibration and movement.

## PROPERTIES

Property	Test Method	Value
• Tear Strength/Length	AS2001.2.8 (Elemendorf Grab)	35.8 N
• Tear Strength/Width	AS2001.2.8 (Elemendorf Grab)	32.9 N
• Breaking Strength/Length	AS2001.2.3.2 (Elemendorf Grab)	186 N
• Breaking Strength/Width	AS2001.2.3.2 (Elemendorf Grab)	58.2 N
• Thickness	AWWA C217-2016 sec 5.2.2.2 (Mod)	1.4mm (Average)
• Water Vapour Transmission	ASTM E96	0.12/ng/Pa s m <sup>2</sup>
• Holiday Testing	ASTM D149	10kV (Recommended)
• Application Temperature	-10 to +55°C	
• Service Temperature	-10 to +75°C	
• Service Life	30 Years +	
• Shelf Life	30 Years +	



## PACKAGING

Part No.	Width	Length	Carton Qty
• PT050HT	50mm	10 metre	36 Rolls
• PT075HT	75mm	10 metre	24 Rolls
• PT100HT	100mm	10 metre	18 Rolls
• PT150HT	150mm	10 metre	12 Rolls
• PT200HT	200mm	10 metre	6 Rolls
• PT300HT	300mm	10 metre	6 Rolls

Other sizes are available on an indent basis.

## PURPOSE

Protects against corrosion Above and Below Ground on Pipes and Pipe Fittings, Tie Rods, and Other Applications.

# GUARDIAN Overwrap PVC Tape

GUARDIAN Overwrap PVC Tape is a key component of the GUARDIAN Petrolatum System.

GUARDIAN Overwrap PVC Tape is a stable, plasticised PVC Carrier coated with an antifungal, pressure sensitive, natural rubber adhesive.

GUARDIAN Overwrap PVC Tape is resistant to acids, alkalais, and bacteria.

GUARDIAN Overwrap PVC Tape increases mechanical and dielectric strength of the GUARDIAN Petrolatum Tape.

## PROPERTIES

Property	Test Method	Value
• Tensile Strength	ASTM D1000	3.15kg/cm (Average)
• Elongation at Break	ASTM D1000	200% (Average)
• Thickness	ASTM D751	0.2mm (Average)
• Adhesion to Steel	ASTM D1000	0.12kg/cm
• Adhesion to Self	ASTM D1000	0.12kg/cm
• Breakdown Voltage		10kV (55% Overlap)
• Application Temperature	-10 to + 75°C	Service Temperature -10 to + 75°C
• Shelf Life & Service Life	30 Years +	



## PACKAGING

Part No.	Width	Length	Quantity	Colour
• PO050B	50mm	30 metre	36 Rolls	Black
• PO100B	100mm	30 metre	18 Rolls	Black
• PO150B	150mm	30 metre	12 Rolls	Black
• PO050W	50mm	30 metre	36 Rolls	White
• PO100W	100mm	30 metre	18 Rolls	White
• PO150W	150mm	30 metre	12 Rolls	White

Other sizes are available on an indent basis.

## PURPOSE

Protects against corrosion Above and Below Ground on Pipes and Pipe Fittings, Tie Rods, and Other Applications.



# GUARDIAN Petrolatum Systems

## APPLICATION PROCEDURE FOR FLANGE PAIR

### STEP 1

**Equipment Requirements:**

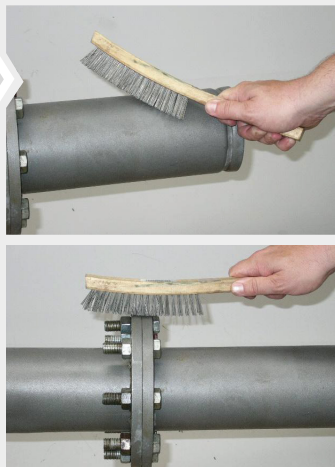
- Stiff Bristle Brush, Wire Brush, or other Cleaning Tool.
- Protective Gloves, Protective Glasses, Knife / Scissors.



### STEP 2

**Surface Preparation:**

- Surface preparation in accordance with ISO 8501-1:1988 to a Class Sa2 or St2.
- This can be achieved by abrasive blast clean, or wire brush, ensuring all loose materials are removed.



### STEP 3

**GUARDIAN Petrolatum Primer Application:**

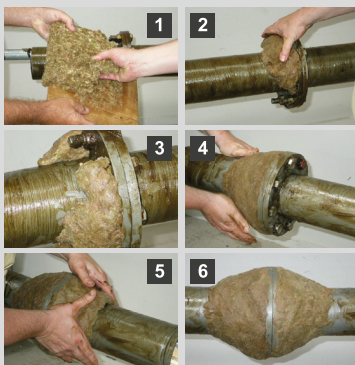
- Apply GUARDIAN Petrolatum Primer to entire surface by hand (gloved) or with a stiff bristle brush.
- Primer should be applied to achieve a material usage of 3-5 m<sup>2</sup>/kg.
- Primer can be applied to a damp surface.



### STEP 4

**GUARDIAN Petrolatum Mastic HT Application:**

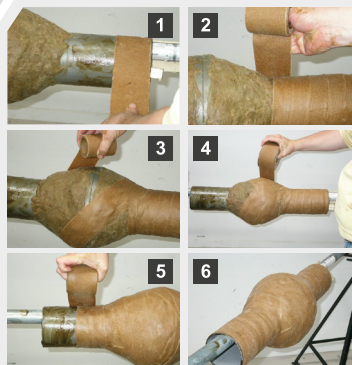
- Apply GUARDIAN Petrolatum Mastic by pressing into the areas likely to create voids (air pockets). Pack the mastic by pressing firmly to ensure intimate contact with the steel surface.
- Whilst applying the mastic, contour the product to create a spherical shape (rounded) to facilitate a smooth tape application.



### STEP 5

**GUARDIAN Petrolatum Tape HT Application:**

- Apply GUARDIAN Petrolatum Tape maintaining a 55% overlap.
- Apply Tape with sufficient tension to eliminate voids/air bubbles.
- Blend all overlap seams by applying thumb pressure to create a homogenous coating.



### STEP 6

**GUARDIAN PVC (Buried) / HD-GW (Above Ground) Overwrap Tape Application:**

- Apply GUARDIAN PVC / HD-GW Overwrap with the same methodology as with the Petrolatum Tape with 55% overlap.
- Creasing will occur with the application of the PVC / HD-GW Overwrap Tape. This is acceptable as the product is applied solely for mechanical protection and electrical resistance. Creasing is minimized if the Flange Pair is pack sufficiently with Mastic [Step 4].



# GUARDIAN Petrolatum Systems

## APPLICATION PROCEDURE FOR GATE VALVE

### STEP 1

**Equipment Requirements:**

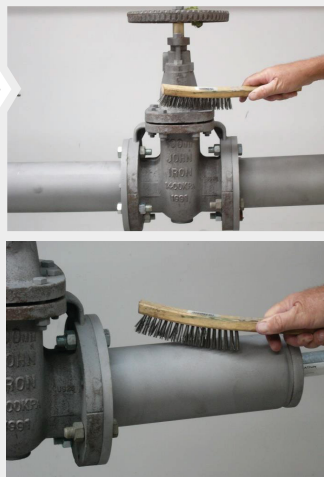
- Stiff Bristle Brush, Wire Brush, or other Cleaning Tool.
- Protective Gloves, Protective Glasses, Knife / Scissors.



### STEP 2

**Surface Preparation:**

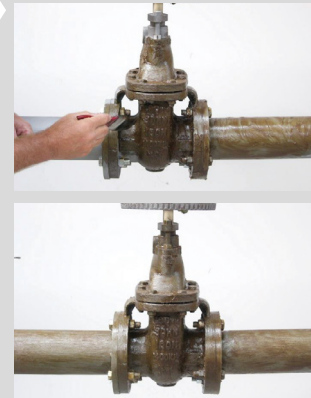
- Surface preparation in accordance with ISO 8501-1:1988 to a Class Sa 2 or St 2
- This can be achieved by abrasive blast clean, or wire brush, ensuring all loose materials are removed.



### STEP 3

**GUARDIAN Petrolatum Primer Application:**

- Apply GUARDIAN Petrolatum Primer to entire surface by hand (gloved) or with a stiff bristle brush.
- Primer should be applied to achieve a material usage of 3-5 m<sup>2</sup>/kg.
- Primer can be applied to a damp surface.



### STEP 4

**GUARDIAN Petrolatum Mastic HT Application:**

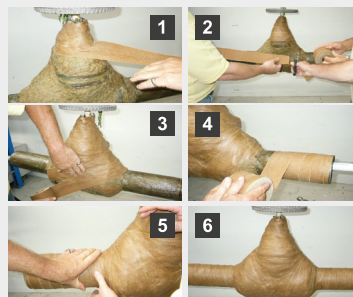
- Apply GUARDIAN Petrolatum Mastic by pressing into the areas likely to create voids (air pockets). Pack the mastic with firm pressure to ensure intimate contact with the steel surface.
- Whilst applying the mastic, contour the product to create a spherical shape (rounded) to facilitate a smooth tape application.



### STEP 5

**GUARDIAN Petrolatum Tape HT Application:**

- Apply the GUARDIAN Petrolatum Tape with a minimum 55% overlap. The tape may be applied in strips across the body of the valve, with loose ends to be tied in with spiral wraps using a wrapping procedure (diagonal wraps).
- Apply tape with sufficient tension to eliminate voids / air bubbles.
- Blend all overlap seams by applying thumb pressure to create a homogeneous coating.



### STEP 6

**GUARDIAN PVC (Buried) / HD-GW (Above Ground) Overwrap Tape Application:**

- Apply GUARDIAN PVC / HD-GW Overwrap with a minimum 55% overlap using the same methodology as with the GUARDIAN Petrolatum Tape.
- Creasing may occur during the application of the PVC / HD-GW Overwrap Tape. This is acceptable as the product is applied for mechanical protection and electrical resistance. Creasing is minimized if the Valve is pack sufficiently with GUARDIAN Petrolatum Mastic [Step 4].



# GUARDIAN Bituwrap Systems

## Product Features & Advantages

### **GUARDIAN Bituwrap Systems Products are a true “ Surface Tolerant Coating Systems ”**

- Minimum Surface Preparation (St2 – ISO 8501- 1:1988)
- Compliant with AWWA C209 & C217 Standards
- High elasticity for controlled tension
- Robust and mechanically strong
- Long Term Service Life 30+ Years
- Operating / Application Temperature : +5°C to +80°C
- Non skilled labor can apply system
- Machine Application (Guardian MAT)
- No requirement for specialized equipment
- No curing time
- Excellent Adhesion to itself & steel surfaces
- No Pin Holes!
- Additional Mechanical Protection with PVC Overwrap
- UV Stability (combined with HD-GW Glasswrap)
- Manufactured according to AWWA C209 & C214
- ISO Certification 9001-2015



# GUARDIAN Bituwrap Systems

## Typical Applications

- Buries Pipeline Field Joints - - - - -
- Linepipe Continuous Wrapping
- Pipeline Fittings (Valves, Elbows, Tees, etc.)
- Gas (Petrol) Stations – Buried Pipework - - - - -
- Pipework on Shipping
- Shipping Vessel Hatch Sealing - - - - -
- Sealing of Pipe Casings / Culverts - - - - -
- Tie-Rods Protection
- Waterproofing & Sealing
- Surface Mounted Buried LPG Bullets - - - - -



# GUARDIAN Bituwrap Systems

## Multi Environment Corrosion Protection System

The GUARDIAN Bituwrap Range consists of the following products:

### 1 GUARDIAN Bituwrap Primer

GUARDIAN Bituwrap Primer is to be applied as a thin coat by brush to the substrate. Coat the area to be wrapped. Primer should be tack dry within minutes (temperature dependent). Wrap within 3 hours of priming or fresh primer should be applied.

### 2 GUARDIAN Mastic HT

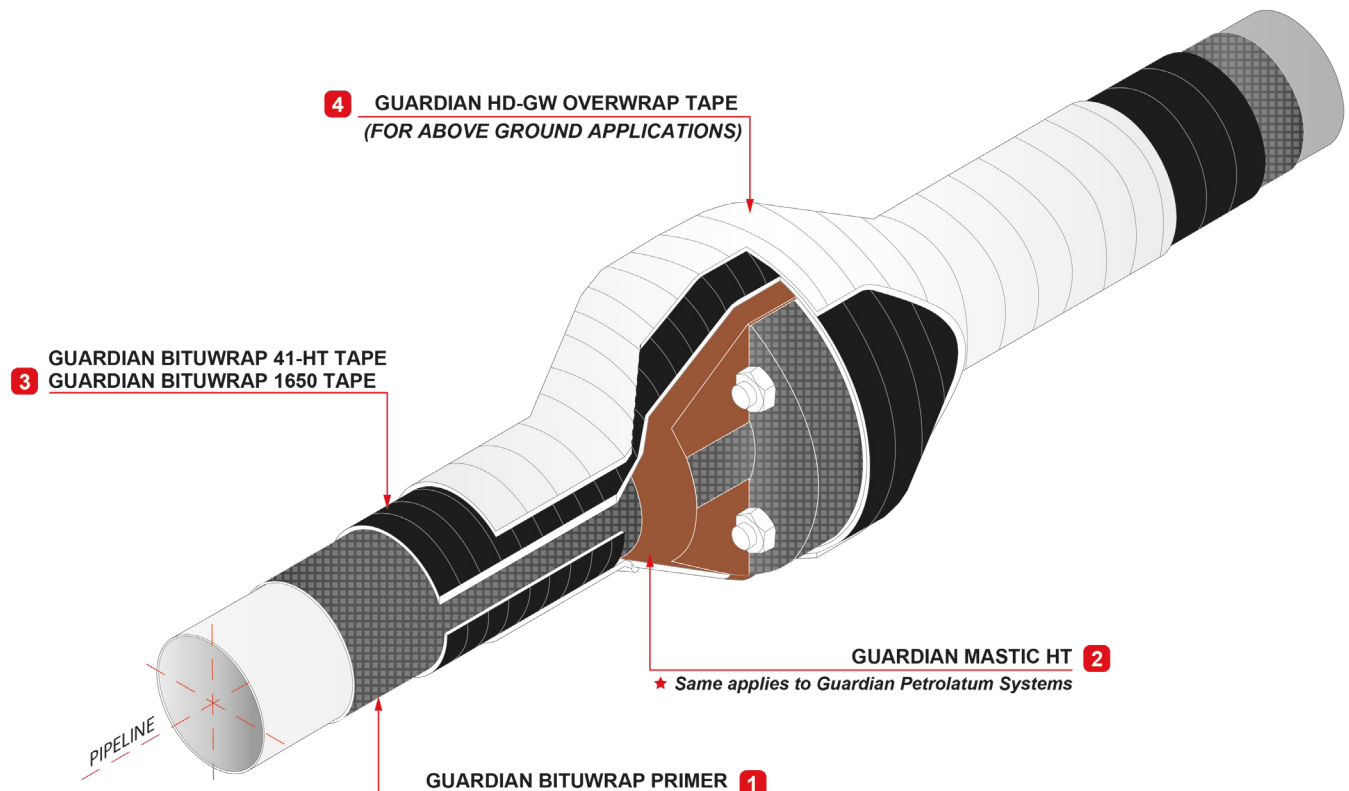
Profile (contour) all sharp angles and voids with GUARDIAN Mastic HT. Profile features so that the GUARDIAN Bituwrap Tape can be applied to avoid bridging or risk of damage to the GUARDIAN Bituwrap Tape while in service.

### 3 GUARDIAN Bituwrap Tape

GUARDIAN Bituwrap Tape is to be applied spirally with a 55% overlap, resulting in a double thickness of tape being applied in a single motion. Maintain firm tension during application to minimise wrinkling. Overlap adjoining tape rolls by 100mm minimum.

### 4 GUARDIAN HD-GW (Glasswrap) Overwrap Tape

GUARDIAN HD-GW Overwrap Tape is to be applied where there is exposure to UV. Apply GUARDIAN HD-GW Overwrap Tape spirally with a 55% overlap and overlap adjoining tape rolls by 100mm.



# GUARDIAN Bituwrap Primer

**GUARDIAN Bituwrap Primer** is a Heavy-Duty Bituminous Primer for use with **GUARDIAN Bituwrap System**.

**GUARDIAN Bituwrap Primer** is suitable for Brush, Roller or Spray applications.

**GUARDIAN Bituwrap Primer** is a fast drying solvent based Anti-Corrosion Bituminous Primer specially formulated to profile minor surface imperfections and enable uniform adhesion of the nominated tape system to the cleaned pipeline substrate.

**GUARDIAN Bituwrap Primer** is designed for use on Above Ground, Below Ground and Sub-Sea Pipelines. Also on pipeline bends, joints and fittings. **GUARDIAN Bituwrap Primer** can also be used for joint sealing of RC Pipes and Concrete Culverts.

## ADVANTAGES

**Performance:** Followed AWWA C209-00 (Sec.4.3.1)

**Surface Preparation:** St2 or Better.

**High Tack:** To promote the effective Bond between the Substrate and the Tape Compound.

**Versatility:** Compound formulated for Maximum Adhesion for different applications and environments.

## PROPERTIES

• Specific Gravity	0.91 (Average)
• Drying Time	2-5 Minutes (Average)
• Coverage	7 m <sup>2</sup> /Litre (Average)

## PACKAGING

Part No.	Size
• BIT-P-05	5 Liter (6 Drums per Carton)

## FIRST AID

Wear suitable protective clothing when applying.

Please refer to Material Safety Data Sheet for detailed safety precautions.

## APPLICATION

• Application Temperature:	- 10 to + 50 °C
• Service Temperature:	- 10 to + 75 °C
• Service Life:	+ 30 Years

## SHELF LIFE

Minimum of 2 Years  
(In original packaging at 25°C or below)



# GUARDIAN Bituwrap 41 HT Tape

**GUARDIAN Bituwrap 41HT Tape** is an optional component for all **GUARDIAN SPLASH-ZONE Systems**.

**GUARDIAN Bituwrap 41HT Tape** is based upon high density polyolefin carrier film laminated with a highly adhesive bitumen rubber compound.

**GUARDIAN Bituwrap 41 HT Tape** has been developed for durability, conformability and controlled elasticity.

**GUARDIAN Bituwrap 41HT Tape** possesses exceptional flexibility during application, permitting the installer to achieve a tight fitting, self sealing sheath over the underlying **GUARDIAN MT** and **PP Petrolatum Tape** wrapping.

**GUARDIAN Bituwrap 41 HT Tape** also provides a cost effective direct to steel linepipe and/or field joint coating system for applications where conditions are not aggressive.

## PROPERTIES

Property	Test Method	Value
• Tensile Strength	ASTM D1000	>5kg/cm <sup>2</sup>
• Elongation	ASTM D638	>300%
• Total Thickness		1.00mm (Avg)
• Carrier (HDPE)		0.14mm (Avg)
• Bitumen Compound		0.86mm (Avg)
• Adhesion To Self	ASTM D1000	2.52 N/mm
• Impact Resistance	ASTM G13	>24 Drops (2 Layers)
• Application Temperatures		-10 to 55°C
• Service Temperature		-20 to 75°C
• Service Life		20 Years +
• Shelf Life		24 Months @ 23°C

## PACKAGING

Part No.	Width	Length	Carton Qty
• BIT41HT-50	50mm	15 Metre	24 Rolls
• BIT41HT-100	100mm	15 Metre	12 Rolls
• BIT41HT-150	150mm	15 Metre	8 Rolls

Other sizes are available on an indent basis.



## APPLICATION

Apply spirally with 55% overlap over **GUARDIAN MT** or **PP Petrolatum Tape**, prior to the **GUARDIAN Outer Cover** installation.

# GUARDIAN Bituwrap 1650 Tape

**GUARDIAN Bituwrap 1650 Tape** is a Heavy Duty Cold Applied Bitumen / PVC Pipe wrap for use where a Tough, Conformable Pipe wrap Coating is required.

**GUARDIAN Bituwrap 1650 Tape** has a Self-Adhesive Anti-Corrosion bituminous rubber compound that provides a Self-Sealing Sheath over the pipeline substrate.

**GUARDIAN Bituwrap 1650 Tape** is designed for use on Buried or Submerged Pipelines. **GUARDIAN Bituwrap 1650 Tape** is conformable, allowing it to be used on Pipeline Bends, Joints and Fittings. Also for use as a Joint Sealing on RC Pipes and Concrete Culverts.

## PROPERTIES

Property	Test Method	Value
• Roll Length/Width		15m/50-300mm
• Thickness (PVC)	EN 1849-1	0.75mm
• Thickness (Adhesive)	EN 1849-1	0.90mm
• Thickness (Total)	EN 1849-1	1.65mm
• Adhesion to Primed Steel	ASTM D1000	2.75N/mm
• Adhesion to Self	ASTM D1000	2.75N/mm
• Tensile Strength	ASTM D638	14.8N/mm <sup>2</sup>
• Tensile Module	ASTM D638	10.5N/mm <sup>2</sup>
• Elongation at Break	ASTM D638	270%
• Dielectric Strength		>40kV
• Impact Resistance		>20 Drops
• Cathodic Disbondment	ASTM G13	<10mm radius
• Temperature Application	ASTM G8	+5°C to +50°C
• Temperature Operating		-20°C to +75°C
• Insulation Resistance		10 <sub>12</sub> Ohms/cm <sup>2</sup>
• Interleave Overwidth		15-25mm
• Colour		Black / Blue
• Performance	AWWA C209-00 (Sec.4.3.1)	

## PACKAGING

Part No.	Width	Length	Carton Qty
• BIT 1650-050	50mm	15 Metre	3 Rolls
• BIT 1650-100	100mm	15 Metre	4 Rolls
• BIT 1650-150	150mm	15 Metre	3 Rolls

## ADVANTAGES

**Surface Preparation:** St2 or better.

**Conformability:** Extruded PVC Carrier Engineered for Toughness, Conformability and Controlled Elasticity.

**Versatility:** Compound formulated for Maximum Adhesion for different applications and environments.

## SHELF LIFE

Minimum of 2 years if stored in sheltered conditions (25°C) in original unopened packaging.

## FIRST AID

Wear suitable protective clothing when applying. Please refer to Material Safety Data Sheet for detailed safety precautions.

# GUARDIAN HD-GW (Glasswrap) Overwrap Tape

**GUARDIAN HD-GW (Glasswrap)** is a resin pre-impregnated fiberglass instant pipe repair, protection, reinforcement, corrosion protection and maintenance system that will set even under water.

**GUARDIAN HD-GW (Glasswrap)** is a water activated and curable polyurethane pre-impregnated fiberglass tape. Normal setting time is 10-30 minutes, but may vary depending on temperature. Water, salt or fresh is the activator!! This revolutionary product will set under water making it ideal for applications in the splash zone, corrosion protection reinforcement, piling protection and electrical insulation to 16,000 volts. It will retain pressure on supply lines and will function under intermittent temperatures from -45°C to +319°C.

## PROPERTIES

Property	Test Method	Value
• Tensile Strength	ASTM D 3039	20.8 kg/f mm <sup>2</sup>
• Flexural Strength	ASTM D 790	15.4 kg/f mm <sup>2</sup>
• Compression Strength	ASTM D 695-77	19.2 kg/f mm <sup>2</sup>
• Thermal Expansion Coefficient	ASTM E 831	7.6 X 10 <sup>-5</sup> /°C
• Dielectric Strength	ASTM D 149	4.3 kV/mm
• Flashing Point		Over 700°C
• Heat Resistance		319°C
• Service Temperature		-45°C to 250°C
• Application Temperature		0°C to 35°C

## Feature

1. Can be used both in salt or fresh water.
2. Cures whilst underwater
3. Non-toxic, Non-combustible and Odourless.
4. Repair leaking cracked or broken pipe of petroleum, oil, gasoline and organic solvent.
5. Can be applied to acid and alkali.
6. Can be used in all sorts of metal, plastics, wood, rubber, PVC and glass.
7. Lessen a stop hour of industrial equipment.
8. No Putty for under non-pressure conditions. With Putty for under pressure conditions.
9. Normally, can be used up to internal pressure of 1,740 psi (120 bar / 122 kgf/cm<sup>2</sup>) after set. Under pressure conditions (while the pipeline is still flowing), the pressure of the pipe should be less than 60 psi (4.1 bar / 4.21 kgf/cm<sup>2</sup>) before setting. But, each additional wrap of rubber and fiberglass tapes provide more pressure on the leak.

**Shelf Life: 3 years and more if stored in cool and shaded area at room temperature.**

## OTHER APPLICATIONS

Overwrap: Guardian Petrolatum and Guardian Splash-zone 60GW System, when applied above ground or where greater mechanical protection is required.

## PACKAGING

### (Without Metal Putty)

Part No.	Weight	Color	Carton Qty
• FG001308	50mm x 5m	Black	10 Rolls
• FG001309	100mm x 5m	Black	10 Rolls
• FG001109	150mm x 5m	Black	10 Rolls
• FG001310	50mm x 5m	White	10 Rolls
• FG001311	100mm x 5m	White	10 Rolls
• FG001312	150mm x 5m	White	10 Rolls
• FG004398	150mm x 10m	Grey	10 Rolls
• FG004391	200mm x 10m	Grey	6 Rolls

### (With Metal Putty)

Part No.	Weight	Color	Carton Qty
• FG001313	50mm x 5m	Black	10 Rolls
• FG001314	100mm x 5m	Black	10 Rolls
• FG001331	150mm x 5m	Black	10 Rolls
• FG001332	50mm x 5m	White	10 Rolls
• FG001333	100mm x 5m	White	10 Rolls
• FG001334	150mm x 5m	White	10 Rolls

## ADVANTAGES

Maximum heat resistance: 606°F (319°C). It is ideal for all types of repair and maintenance applications. Odourless, non-combustible and non-toxic. It can be sanded and painted if desired. Once set, gas, oil or diesel fuel will not affect the repair material.

# GUARDIAN Bituwrap Systems **APPLICATION PROCEDURE**

This application guide is applicable for the Guardian Bituwrap 41HT & 1650 Tape Systems.

Application guide for the installation of Bituwrap Tape Systems on line pipe, welded field joints, induction (long radius) pipe bends, other pipeline appurtenances and flange joints . This system shall provide anti-corrosion for buried pipeline structures or tie-rods.

## Equipment List

Power Wire Brush / Scraper / Abrasive Blast Cleaning Equipment (optional), Wire Brush, Brush Cleaning Solvent, Scissors / Utility Knife, Overalls, Eye Protection, Respirator, Gloves, Cleaning Cloth, Hand Cleaner, Barrier Cream.

## Steel Substrate Preparation

The steel substrate shall be dry and free from any deleterious materials such as dirt, grease and loose scale. The steel substrate shall be cleaned in accordance with ISO 8501-1988 St2 Standard. This can be achieved by mechanical wire brush or similar.

If the steel pipe being protected is old and suffered heavy corrosion pitting, the steel surface should be abrasive blast cleaning to Class Sa 2.5 (ISO 5801-1988).

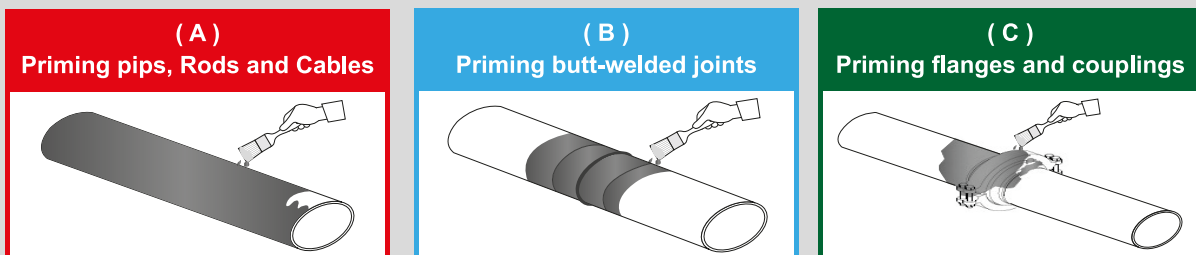
## Application of GUARDIAN Bituwrap Primer

Apply an even coat of GUARDIAN Bituwrap primer, approximately 50-75 microns thickness, free from runs, sags to the steel substrate to be wrapped. Primer should extend beyond the area to be wrapped by 25mm to ensure all the steel substrate to be protected is applied with primer under the Bituwrap Tape.

For application on welded field joints, the primer shall be applied 50-75 microns thickness, overlapping on to pipe coating (factory applied) by a minimum of 125mm.

- Specific Gravity 0.91 (Average)
- Drying Time 5 Minutes (Average @ 30°C)
- Coverage 7-9 m<sup>2</sup>/Liter (Average)

The following figure: Apply GUARDIAN Bituwrap Primer to entire area to be wrapped with tape





# GUARDIAN Bituwrap Systems APPLICATION PROCEDURE

## Application of GUARDIAN Bituwrap Tape

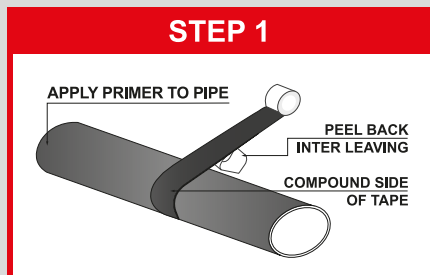
### Tape Width Selection Guide

- ≤ 100mm NB - Recommended 50mm width tape
- ≥ 100mm NB / ≤ 400mm NB - Recommended 100mm width tape
- ≥ 400mm NB - Recommended 150mm width tape

Select tape width based upon guide above. Remove tape interleaving approximately 300mm apply the adhesive side of the Bituwrap tape firmly to the primed pipe. Unroll the tape about 300mm, peel back the interleaving and wrap the Bituwrap tape spirally ensuring correct alignment. Maintain sufficient tension to ensure that the tape conforms to the surface without gaps. Repeat this, overlapping each turn by at least 25mm or preferably 55% to give double thickness. Start new roll by a minimum 50mm.

Note: Where longitudinal welds are included in the area to be wrapped, apply a 100mm wide strip of the tape longitudinally over the weld and press into the contours before wrapping.

### (A) Line Pipe, Long Radius Pipe Bends, Tie Rods



Starting the first roll of tape.

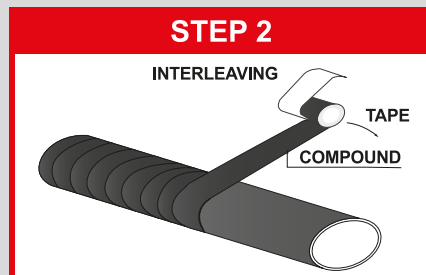
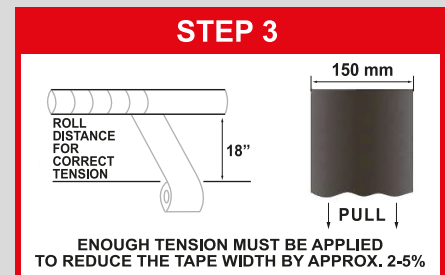


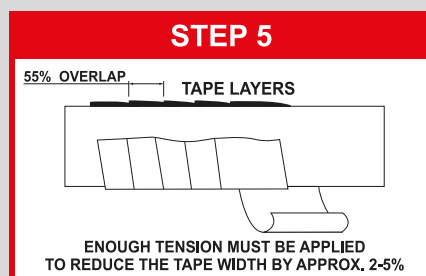
Diagram showing the correct application produce for wrapping tape.



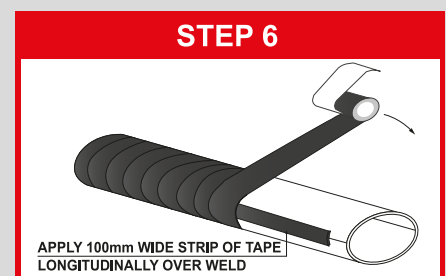
Ensure that tape is applied with the correct amount of tension to reduce width as shown in illustration above.



Starting a new roll of tape.



Overlapping each turn by 55% gives a double thickness.



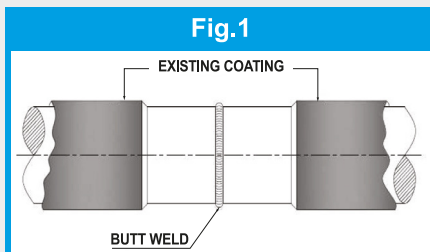
Wrapping a longitudinal weld.

# GUARDIAN Bituwrap Systems APPLICATION PROCEDURE

## Application of GUARDIAN Bituwrap Tape (B) Welded Field Joints

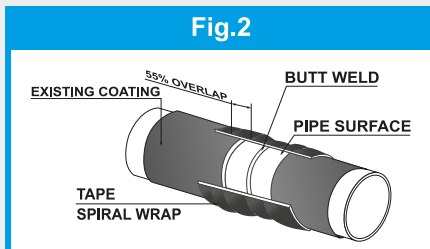
Process as (A) but start and finish wrapping with a minimum of 75mm overlap (recommended 100mm) on to the existing pipe coating either side of the joint area.

Commence application minimum 75mm onto the factory linepipe coating with a straight circumferential wrap and then proceed with application spirally incorporating a 55% overlap across the welded field joint completing with a straight circumferential wrap extending minimum 75mm onto the adjacent linepipe factory coating.



Butt weld and existing coating ready for over wrapping with tape.

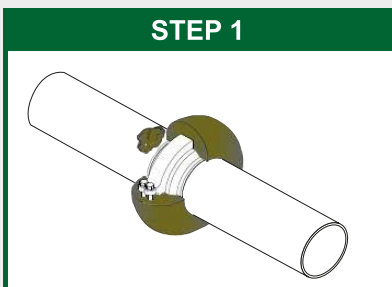
**NOTE** cutback of coating can be 75mm-150mm either side of the weld except on FBE coated pipe.



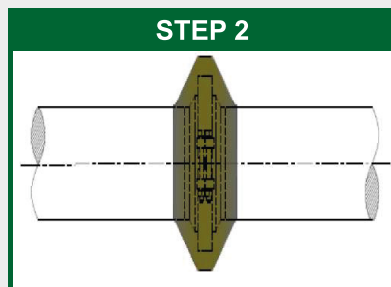
**NOTE** method of wrapping.

- Starting with one circumferential turn onto factory coating.
- Then change to spiral wrap with 55% overlap over weld area.
- Finish with one circumferential turn over factory coating the opposite side of the weld, Overlap tape at least 75mm existing coating.

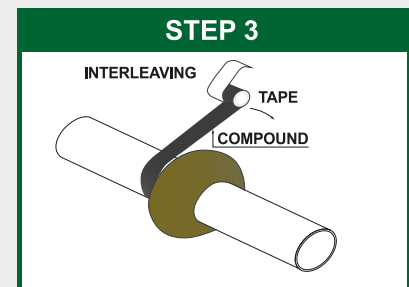
## Application of GUARDIAN Bituwrap Tape (C) Flange Joints



Profiling the joint with **GUARDIAN MASTIC HT** after applied **GUARDIAN Primer**.



Make sure the mastic is pushed into all crevices and that it forms a smooth profile for wrapping.



Butt weld and existing coating ready for over wrapping with tape.

**NOTE** cutback of coating can be 75mm-150mm either side of the weld except on FBE coated pipe.

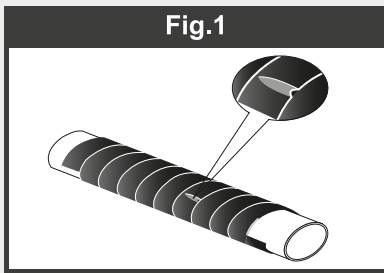
# GUARDIAN Bituwrap Systems

## GUARDIAN Bituwrap Tape

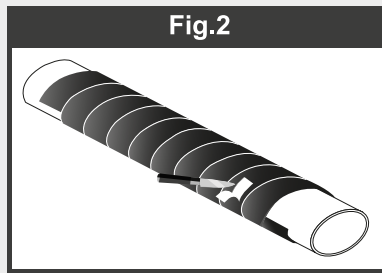
### Inspection and Repair Guidelines

#### GUARDIAN Bituwrap Tape Wrapped Inspection

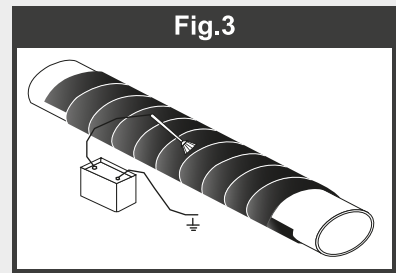
Ensure that the entire surface is covered with no gaps or air pockets Holiday test at 10kV for single layer and 15kV for double layer.



Example for the gaps or air pocket (see Repair Guidelines Figs 1-5)



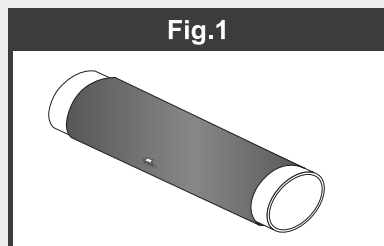
Adhesion can be tested by pulling / removing a 50mm wide coupon of tape from the surface.



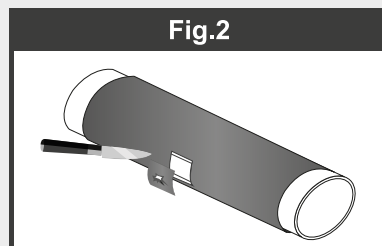
Perform holiday test using a ring or brass (10kV for single later and 15kV for double).

#### GUARDIAN Bituwrap Tape Wrapped Repair Guidelines

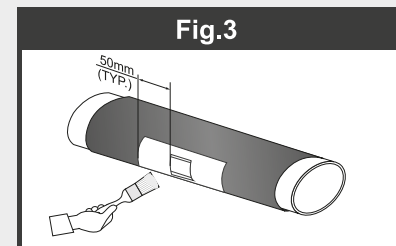
Cut away and remove loose coating from damaged area and smooth or chamfer edges. Clean area thoroughly then prime the exposed metal extending 50mm either side of the damage. Repair the damaged area with a patch of tape. Wrap the section of pipe as (B) in page 17.



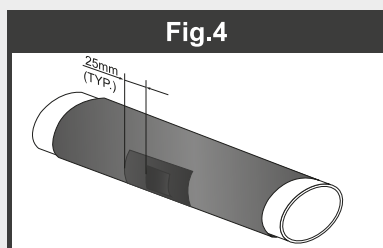
Damaged pipe coating.



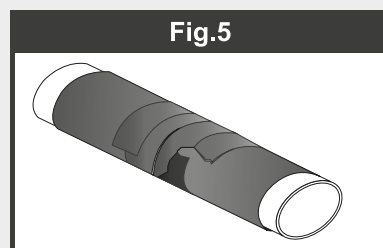
Remove loose or damaged area then clean thoroughly.



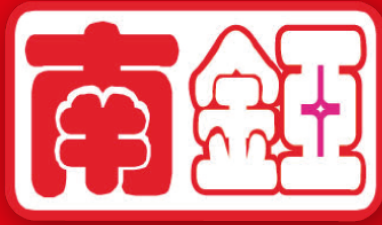
Smooth edges and prim area at least 50mm onto sound coating.



Repair damaged are with a patch of tape overlapping at least 25mm onto primed sound coating area before wrapping with tape as (B).



Overwrap repair as (B).



# 南鋁五金有限公司

## NAN YA HARDWARE SDN. BHD.

REG.NO: 200301008381 (610801-V)



NAN YA HARDWARE SDN. BHD. WAS FOUNDED IN THE YEAR 2001. THE CORE BUSINESS OF THE COMPANY IS THE DISTRIBUTION OF PLUMBING AND ENGINEERING HARDWARE.

NAN YA IS THE SOLE DISTRIBUTOR AND ALSO STOCKIST OF VARIOUS MANUFACTURERS IN THE PLUMBING AND PIPING SYSTEM INDUSTRIES. OUR WAREHOUSE IS APPROXIMATELY 50,000 SQUARE FEET TO ENSURE SUFFICIENT STOCKS ARE READY FOR OUR CLIENTS IMMEDIATE NEEDS.

WE SPECIALIZE IN WATER AND SEWAGE PIPE LINE SYSTEM, DISTRIBUTE RESIDENTIAL, INDUSTRIAL USE PLUMBING, PIPES, FITTINGS, VALVES, TANKS, PLUMBING RELATED EQUIPMENTS AND TOOLS TO THE HARDWARE DEALERS. WE SUPPLY TO CONTRACTORS AND WORK TOGETHER WITH CONTRACTOR ON PROJECT BASIS FOR ENGINEERING WORKS .

OUR ULTIMATE GOAL IS TO PROVIDE 100% CUSTOMER SATISFACTION. WITH THE CONCEPT OF 1-STOP-SOLUTION FOR PLUMBING NEEDS BY SUPPLYING FULL RANGE OF PRODUCTS FROM VARIOUS MANUFACTURERS TO FULFILL OUR CUSTOMERS' REQUIREMENTS AND TO SUIT THEIR BUDGET ON THE PROJECT THEY ENGAGED TO. DELIVERY ON TIME IS OUR PRIORITY AND COMMITMENT TO OUR CUSTOMERS.



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