

# Contractor and Engineer Handbook

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## 1.0 Petroguard Overview

The **Petroguard** system consists of a surface tolerant non-hardening petrolatum coating, petrolatum primer paste, and petrolatum mastic. A pressure sensitive adhesive PVC overwrap is available to protect the petrolatum tape in buried applications or where there are extreme environmental conditions. The **Petroguard** system is designed to stop as well as prevent the corrosion and degradation of metal surfaces. Application of the **Petroguard** system will extend the life of steel surfaces by 20+ years.

## 2.0 Installation Specifications – Steel Pipe, Valves, Flanges and Fittings

### 2.1 General Requirements

Engineer shall comply with all written recommendations of the supplier regarding applications of the specified system.

To obtain the specified materials, or for technical inquiries, please contact Advanced Corrosion Solutions Inc. 68 Healey Road Unit #6 Bolton Ontario Canada L7E 5A4 Phone: (888) 463-8162 Fax: (888) 692-9165 Email: [info@advancedcorrosionsolutions.com](mailto:info@advancedcorrosionsolutions.com)

### 2.2 Materials

#### **Petroguard Tape**

A non-woven bonded synthetic fabric, fully impregnated and coated with neutral petroleum based compounds and inert fillers. It is chemically inert, does not polymerize or oxidize, and retains water resistance and dielectric properties over an indefinite period.

#### **Petroguard Primer Paste**

A preparatory primer paste used to displace surface moisture, passivate surface oxides and fill small irregularities in the surface substrate. Consists of saturated petroleum based compounds and passivating agents.

#### **Petroguard Mastic**

A filler which profiles areas to be wrapped by easing contours on pipe joints, flanges, valves, bolts and other irregular shapes. Consists of saturated petroleum based compounds, inert fillers, and reinforcing fibers.

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## Materials (Cont'd)

### Petroguard Overwrap

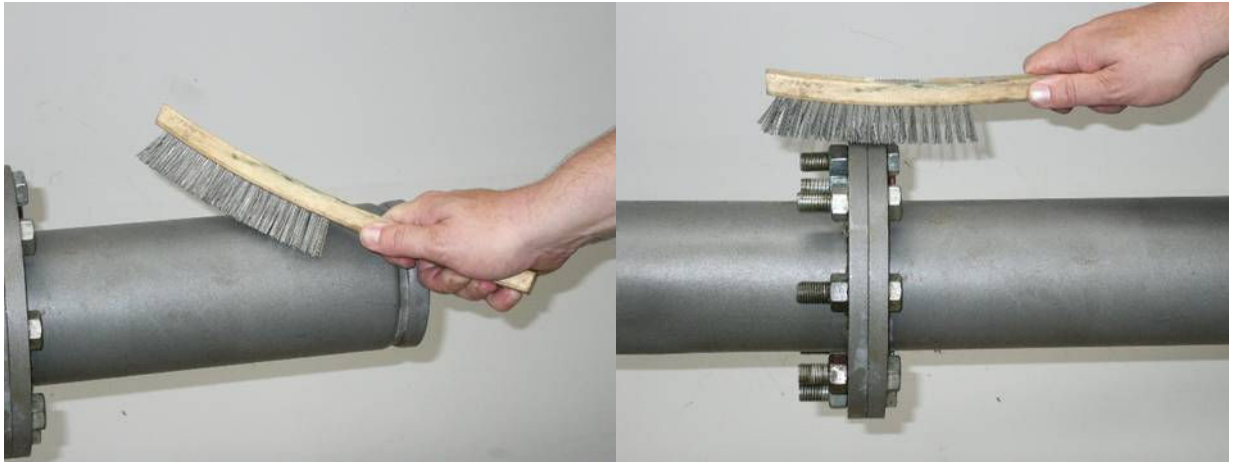
A stabilized, plasticized Polyvinyl Chloride (PVC) film coated with an anti-corrosive pressure sensitive adhesive used to wrap over petrolatum tapes to provide additional protective properties. PVC outer-wrap will provide protection for the underlying petrolatum tape system against accidental impact and damage from backfill in below ground applications. It is flexible, resists acids, alkalis and oils.

### 2.3 Surface Preparation Requirements

Remove all visible dirt, grease and oil including excessive moisture in accordance with the requirements of SSPC-SP1 "Solvent Cleaning".\*

Remove all weld spatter, sharp points and edges.

Remove loose rust, paint and foreign matter by hand and/or power tool cleaning in accordance SSPC-SP-2 "Hand Tool Cleaning"\*\*\* or SSPC-SP-3 "Power Tool Cleaning"\*\*\*



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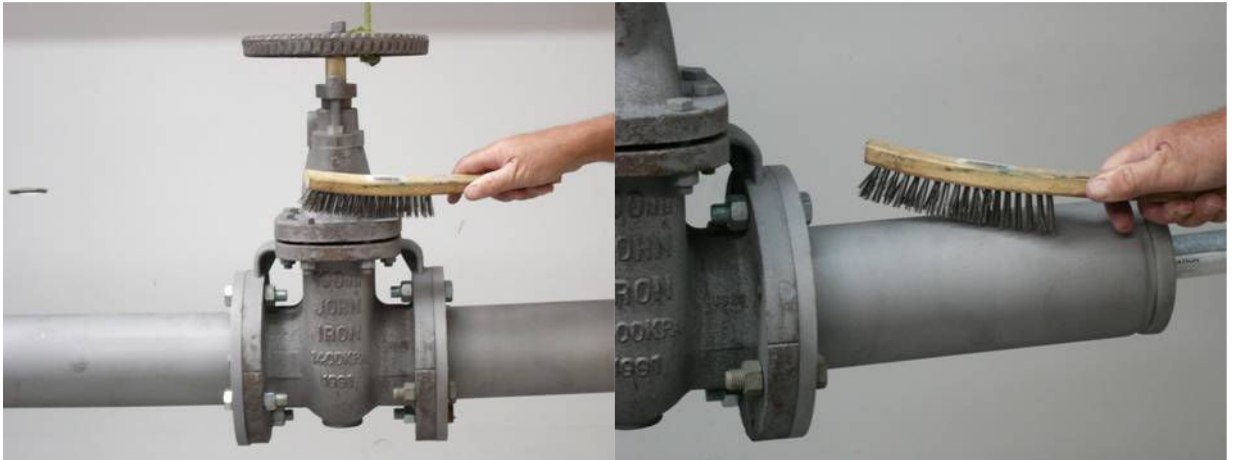
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## Surface Preparation Requirements (Cont'd)



High pressure water blasting may also be used to clean the surface.

### \*SSPC-SP1 “Solvent Cleaning”

Removal of all detrimental foreign matter such as oil, grease, dirt, soil, salts, drawing and cutting compounds, and other contaminants from steel surfaces by the use of solvents, emulsions, cleaning compounds, steam or other similar materials and methods which involve a solvent or cleaning action.

### \*\*SSPC-SP-2 “Hand Tool Cleaning”

Removal of all rust scale, mill scale, loose rust and loose paint to the degree specified by hand wire brushing, hand sanding, hand scraping, hand chipping or other hand impact methods or by a combination of these methods. The substrate should have a faint metallic sheen and be free of oil, grease, dust, soil, salts and other contaminants.

### \*\*\*SSPC-SP-3 “Power Tool Cleaning”

Removal of all rust scale, mill scale, loose paint and loose rust to the degree specified by power wire brushes, power impact tools, power grinders, power sanders or by a combination of these methods. The substrate should have a pronounced metallic sheen and also be free of oil, grease, dirt, soil, salts and other contaminants. Surface should not be buffed or polished smooth.

## 2.4 Application of Petrolatum Primer Paste

Apply the petrolatum primer paste by hand, brush, glove, rag or roller.

Apply a thin uniform film over the entire surface to be wrapped. Primer should be applied to achieve a material usage of 3 – 5 m<sup>2</sup>/kg

Apply a liberal coating to threads, cavities, shoulders, threads and pits.

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### Application of Petrolatum Primer Paste (Cont'd)



#### 2.5 Application of Petrolatum Mastic

To protect complex surfaces and configurations such as valve bodies, flanges, dresser couplings etc. apply petrolatum mastic by filling and packing to achieve a uniform contour to which tape can be applied without bridging or voids.



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### Application of Petrolatum Mastic (Cont'd)

Pack the mastic to ensure intimate contact with the substrate.



### 2.6 Application of Petrolatum Tape

The tape shall be spirally wrapped on pipe and fittings using a minimum 25mm (1") overlap on all applications. Where additional protection is required, the overlap shall be increased to 55% which will provide a double thickness of tape.

The tape may be applied longitudinally, i.e. "cigarette wrapped", when the space is too restricted or confined to apply in the preferred spiral manner. Use a minimum 25mm (1") overlap, and keep the overlap on the topside of the pipe to prevent a weatherboard effect.

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### Application of Petrolatum Tape (Cont'd)

Hold end of tape firmly against starting point and firmly press against the surface. Unroll the tape, keeping the roll close to the surface. Do not get a long lead of tape as it will tend to fold and gap on the surface being wrapped. The tape is best applied by rolling it around the pipe and giving it proper tension (Figure 1).

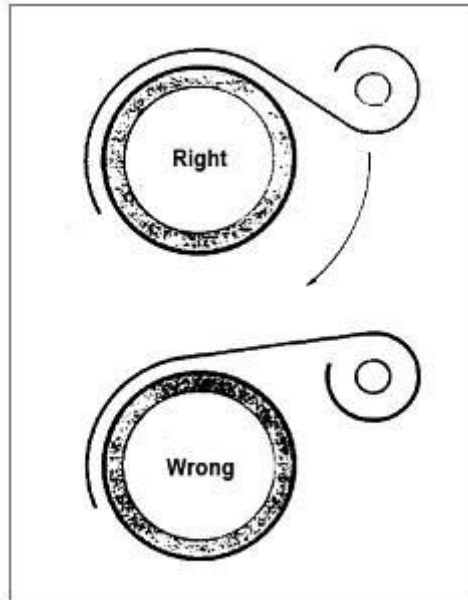


Figure 1

Apply sufficient tension to provide continuous adhesion, but do not stretch the tape. As application proceeds, press out all folds and air pockets that may occur.

Maintain a minimum 150mm (6") overlap when overlapping one roll with the end of a new roll. Overlap must occur on the top half of the pipe.

At the completion of each roll, smooth the overlaps by hand in the direction of the spiral to ensure sealing of the overlap (Figure 2). On all vertical applications begin at the bottom and proceed up thereby creating a "weatherboard overlap" (Figure 2).

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## Application of Petrolatum Tape (Cont'd)



Figure 2

### 2.7 Application of Protective Overwrap – Adhesive PVC

Apply the PVC overwrap using the same method as the petrolatum tape, achieving a 55% overlap. Creasing will occur during application. This is acceptable as the outer-wrap is applied solely for mechanical protection as well as electrical resistance. The overwrap has no effect on the anti-corrosion properties of the **Petroguard** system.



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### 3.0 Inspection of Petroguard After Application

The nature of the protective overwraps allow for their easy removal and periodic inspection of the substrate and petrolatum coating underneath. This can be done without any negative effect to the anti-corrosion properties of the system.

When a substrate has been protected with the PVC overwrap, cut an X in the overwrap and petrolatum tape with a utility knife approximately 75mm x 75mm. Peel open the flaps to expose the substrate for inspection. Once inspection is complete, separate the PVC overwrap flaps from the petrolatum tape flaps. Press the petrolatum flaps back in place making sure to smooth the tape, and smear the cut edges together. Close the PVC overwrap flaps, pressing firmly so that it adheres. The cut area can then be wrapped with a single layer of new PVC overwrap, or it can be left as is. The coating system is again ready for service.

### 4.0 Repair of Damaged Tape or Coating

If the system is damaged through the PVC overwrap into the petrolatum tape, the procedure below should be followed:

1. Cut away the PVC overwrap around the full circumference of the pipe in the damaged area.
2. The damaged petrolatum tape can be repaired by applying a patch or a full circumferential wrap. The new petrolatum tape can be easily pressed in to the old tape creating seamless edges. Patches should only be installed on the top portion of a horizontal run of pipe. All other applications should use a full circumferential wrap of new tape over the damaged area.
3. Spirally wrap the area that has been repaired with a new layer of PVC overwrap using a 25mm overlap, and a minimum 150mm overlap where the new PVC overwrap meets the previously installed layers.

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## 5.0 Material Quantity Calculations

### 5.1 Recommended Widths of Tape

Substrate Diameter	Tape Width
Up to 75mm	50mm
100mm & 150mm	100mm
200mm, 250mm & 300mm	150mm
Larger Diameters use 200mm or 300mm in Accordance with Conditions	

### 5.2 Formula for Calculating the Surface Area of Pipe

To calculate the surface area of a run of pipe in m<sup>2</sup>, use the following formula:

$$\text{Pi} * (\text{Pipe Diameter in mm} / 1000) * \text{Length of run in m} = \text{m}^2$$

Example:

Calculate the surface area of a 305m run of 600mm diameter pipe.

$$3.14(600/1000)*305 = 574.62\text{m}^2$$

### 5.3 Quantity Estimate Tables

#### 5.3a Petrolatum Tape

Tape Width (mm)	Tape Length (m)	Rolls Per Case	Coverage w/ 25mm overlap (m <sup>2</sup> /case)	Coverage w/ 55% Overlap (m <sup>2</sup> /case)
50	10	36	8	8
100	10	18	13	8
150	10	12	15	8
200	10	8	13	8
300	10	6	16	8

#### 5.3b PVC Overwrap

Tape Width (mm)	Tape Length (m)	Rolls Per Case	Coverage w/ 25mm overlap (m <sup>2</sup> /case)	Coverage w/ 55% Overlap (m <sup>2</sup> /case)
50	33	36	20	23
100	33	18	30	23
150	33	12	33	23

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**5.3c Petrolatum Mastic**

<b>Pipe Diameter</b>	<b>Flanged Joint</b>	<b>Flanged Valve</b>	<b>Dresser Coupling</b>
<b>mm</b>	<b>kg</b>	<b>kg</b>	<b>kg</b>
100	3.15	9.45	8.10
150	4.05	12.15	9.90
200	4.95	14.85	13.50
250	6.30	18.90	17.10
300	7.20	21.60	20.70
350	8.16	24.30	23.60
400	9	27	25.20
450	10.80	32.40	29.70
500	11.70	35.10	32.60
600	13.50	40.50	39
750	18	54	41.20

**5.3d Petrolatum Primer Paste**

<b>Tub Size</b>	<b>Packaging Per Case</b>	<b>Coverage Per Case (m<sup>2</sup>)</b>
4kg	4 x 4kg tubs	45
25kg	1 x 25kg tub	112.50

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