Serviwrap
Pipeline Protection

OFFSHORE • ONSHORE • NEW PIPE • REFURBISHMENT

GRACE
Construction Products
The Company

Grace sets the standards in pipeline protection systems. Serviwrap pipewrap protects off-shore and on-shore pipelines on major projects throughout the world.

Grace Construction Products Waterproofing Systems has more than 30 years of in-depth experience in the chemistry of plastic, polymers and bituminous materials. Serviwrap was launched in 1972 and by virtue of technically innovative ideas and dedicated service swiftly grew to international recognition.

As part of the Grace Construction Products global organisation, Serviwrap benefits from a totally committed and dynamic international research and development programme coupled with comprehensive engineering and field service support.

The company has established bases worldwide and a strong technical sales force. At home and abroad Serviwrap has an enviable track record and enjoys market leadership in many areas through proven experience in the pipeline industry. Serviwrap seeks appropriate involvement with its customers at every stage from design to construction.

The Product

Serviwrap cold applied systems provide complete anti-corrosion protection, equally effective on pipe lengths, bends, joints, fabrications or valves.

Serviwrap consists of a thick layer of self-adhesive compound bonded to a tough, flexible outer carrier film. The characteristics of the product can be altered to suit individual projects. Grace ensures that consistent high quality is achieved through carefully controlled manufacturing processes. The company's on site experience can assist customers to overcome particular environmental problems, whether off-shore or on-shore.

Serviwrap specialists visit project sites to familiarise inspectors and operatives with product application standards and techniques.

Quality Assurance

Grace has been assessed and accredited by the British Standards Institution to BS EN ISO 9001:1994 (formerly BS 5750: Part 1). Grace is proud to have achieved registration under the demanding and comprehensive Part 1 which applies to the design, development and manufacture of products made at the Slough site.

Protective Interleaf

An important feature of Serviwrap products is the overwise release paper on each roll. Removed during application, it protects the product during storage and promotes rapid trouble free application. Transfer of dust and other contaminants to the surface of the pipe is also avoided.
Offshore

The development of Serviwrap in the early 1970s changed the face of submarine pipeline weld joint corrosion protection.

The system offers:
- Exceptional adhesion and resistance to cathodic disbondment.
- Self-bonding overlaps; a total water and moisture vapour-proof seal.
- Compatibility with coal tar enamel, asphalt enamel, polyethylene and epoxy factory-applied coatings.
- Ability to withstand mastic asphalt poured at temperatures in excess of 210°C.
- Excellent mechanical strength.
- Fast, simple application.

Submarine pipelines are commonly protected against corrosion by a variety of yard or factory-applied coatings ranging from coal tar enamel, asphalt enamel and polyethylene to fusion bonded epoxy. Serviwrap is used in conjunction with all of these to provide continuity of the corrosion coat at the welded joints as these are completed on the pipe laying barge.

When welding is complete, the Serviwrap is quickly applied so that it overlaps the yard-applied corrosion coat. The whole is then surrounded by hot mastic asphalt poured within a metal mould. Serviwrap is also suitable for use under polyurethane or polymer concrete infills.

Serviwrap is equally suitable for protection of spool pieces, tees and other subsea fabrications.

A special tribute to Serviwrap’s excellent adhesion and handling proportion is its popularity with companies who carry out subsea connections by hyperbaric welding.

The connecting pup and adjoining pipe are wrapped under difficult conditions in a subsea habitat when welding is completed.

Serviﬂex A: Crack control for concrete weight coatings

The process of pipe laying at depths often in excess of 150 metres requires the pipeline to progress through pronounced bends immediately to the rear of the lay barge and again at the seabed.

Placed as a ring around the corrosion coat at approximately one metre centres Serviﬂex A is designed to:
- Locate resulting cracks at predetermined centres.
- Prevent crack propagation through the corrosion coat.
- Diminish the probability of loss of concrete.

Serviﬂex A has been proven to work effectively with concrete weight coat up to 175mm (7") thick.
New Construction

The Serviwrap cold-applied system can be speedily applied with limited labour under all normal working conditions either by static roller rig type machine or by hand.

By Machine
Serviwrap machine grade tapes are suitable for application by static ‘roller-rig’ type machines whether in the pipe supplier’s yard or at site.

By Hand
Serviwrap is compatible with coal tar enamel, bitumen enamel, polyethylene, fusion bonded epoxy, and most other mill applied coatings commonly in use.

It is widely used for completing the anti-corrosion protection of pipelines which have been factory or yard-coated with such materials.

These tapes are designed to minimise the risk of damage to the wrapped pipes both during transportation and in the various handling operations as the pipes are laid in the trench.

The resulting cost-effective protection is of the highest standard and has been used on hundreds of miles of pipes, both in the UK and overseas.

The system is ideally suited to field application being:
- Simple to apply.
- Requires only limited labour.
- Can be applied under all normal working conditions.
- Needs no heating or other special equipment.

Serviwrap systems provide tough anti-corrosion protection to pipelines, bends, fab

ServiSleeve
ServiSleeve is a field weld sleeve protection for buried steel pipeline.

The ServiSleeve system has the following outstanding characteristics:
- Cold applied.
- High bond strength.
- Low application cost.
- Compatible with all factory applied coatings.

ServiSleeve is a unique cold-applied wrap around sleeve designed to provide a high quality field joint protection on distribution and cross country pipelines.

Application is simple and eliminates all the difficulties associated with hot-applied field joint coatings, such as insufficient pre-heating of the joint area, and insufficient, excessive or uneven post heating.

ServiSleeve displays outstanding conformability around the weld seams and at the overlap onto the mill applied corrosion coating, and can be safely applied in hazardous areas of high fire risk or on ‘live’ pipelines.
self-adhesive, self-sealing, the highest capability for tions and valves.

Refurbishment

The Serviwarp refurbishment system is a cost-effective solution to the need to refurbish the external coatings of buried pipelines without taking them out of service.

The upgrading or replacement of the corrosion protection on a buried gas or oil pipeline can be tackled by one of several methods. The choices are:

- Replace the line.
- Take it out of operation, remove it from the ditch and renovate.
- Leave it in operation and renovate it in the ditch.

Of these, the latter is likely to be the most cost effective.

Serviwarp was used to refurbish this pipeline operating in highly corrosive soil conditions and submerged below the water table. Subsequent re-excavation and test inspection confirmed the successful performance of Serviwarp.

The Serviwarp refurbishment system has the following outstanding characteristics:

- Exceptional adhesion and resistance to cathodic disbondment.
- Simple and inexpensive cold applied application techniques.
- Excellent mechanical and dielectric strength characteristics.

Servilok

The Servilok system ensures total continuity from one roll of the wrap to the next so that irrespective of the length or diameter of the pipe being protected, the wrap exerts reliable and predictable hoop tension.

Over 400 kilometres of operational pipelines at locations as far apart as Saudi Arabia, Australia, Kenya and Hong Kong vouch for the cost-effectiveness of Serviwarp.
Technical Specifications Chart

The complete range of anti-corrosion pipewraps, ancillary products and systems is listed below. Further more detailed technical advice is available from Serviwrap sales engineers, who should be consulted to determine the suitability of the selected products for each particular project.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Designed Mode of Use</th>
<th>Application Method</th>
<th>Thickness</th>
<th>Climatic Zone</th>
<th>Roll Widths</th>
<th>Roll Lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serviwrap R30A</td>
<td>Buried pipe field joints, pipework, fabrications and</td>
<td>■</td>
<td>1.65mm</td>
<td>Temperate</td>
<td>50, 75, 100, 150mm or to order</td>
<td>12m for hand application</td>
</tr>
<tr>
<td>Serviwrap R30B</td>
<td>Buried pipe field joints, pipework, fabrications and coating repairs.</td>
<td>■</td>
<td>1.65mm</td>
<td>Tropical</td>
<td>50, 75, 150mm or to order</td>
<td>15m for hand application</td>
</tr>
<tr>
<td>Serviwrap V30F</td>
<td>Pipe lengths and field joints on pipelines operating at higher temperatures.</td>
<td>■</td>
<td>1.65mm</td>
<td>Temperate and Tropical</td>
<td>50, 100, 150mm</td>
<td>15m or to order</td>
</tr>
<tr>
<td>Serviwrap T30A</td>
<td>Buried pipe lengths.</td>
<td>■</td>
<td>1.65mm</td>
<td>Temperate</td>
<td>100, 150, 225 or 300mm</td>
<td>60m for machine application</td>
</tr>
<tr>
<td>Serviwrap T30B</td>
<td>Buried pipelines particularly subject to severe soil stresses.</td>
<td>■</td>
<td>1.65mm</td>
<td>Tropical</td>
<td>50, 100, 150, 225 or 300mm</td>
<td>15m for hand application 60m machine application</td>
</tr>
<tr>
<td>Serviwrap M30A</td>
<td>Field joints on concrete weighted submarine pipelines. Designed for use under hot-poured mastic asphalt or other infill.</td>
<td>■</td>
<td>1.65mm</td>
<td>Temperate</td>
<td>100, 150, 450mm or to order</td>
<td>15m or to order</td>
</tr>
<tr>
<td>Serviwrap M30B</td>
<td>Field joints on concrete weighted submarine pipelines. Designed for use under hot-poured mastic asphalt or other infill.</td>
<td>■</td>
<td>1.65mm</td>
<td>Tropical</td>
<td>100, 150, 450mm or to order</td>
<td>15m or to order</td>
</tr>
<tr>
<td>Serviwrap R15A</td>
<td>Buried line pipe field joints, pipework and fabrications.</td>
<td>■</td>
<td>1.14mm</td>
<td>Temperate</td>
<td>50, 75, 100, 150mm or to order</td>
<td>12m for hand application</td>
</tr>
<tr>
<td>Serviwrap T15B</td>
<td>Buried line pipe field joints, pipework and fabrications.</td>
<td>■</td>
<td>1.14mm</td>
<td>Tropical</td>
<td>50, 100, 150, 225, 300mm or to order</td>
<td>20m for hand application</td>
</tr>
<tr>
<td>Serviwrap P4B</td>
<td>Buried line pipe field welds, pipework &amp; pipe fittings - especially useful for small diameter pipe.</td>
<td>■</td>
<td>1.00mm</td>
<td>Tropical</td>
<td>50, 100, 150, or to order</td>
<td>20m for hand application</td>
</tr>
<tr>
<td>Serviwrap Outerwrap</td>
<td>Offers additional mechanical strength when wrapped over Serviwrap anti-corrosion pipewraps.</td>
<td>■</td>
<td>0.255mm</td>
<td>Temperate and Tropical</td>
<td>50, 100, 120mm</td>
<td>33m</td>
</tr>
<tr>
<td>Product Name</td>
<td>Designed Mode of Use</td>
<td>Application Method</td>
<td>Thickness</td>
<td>Climatic Zone</td>
<td>Roll Widths</td>
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<tr>
<td>Servisleeve</td>
<td>Cold applied wrap around sleeve for field welds of buried pipelines.</td>
<td></td>
<td>2.00mm</td>
<td>Temperate &amp; Tropical</td>
<td>200, 300, 400, 600mm</td>
<td>To suit pipe diameter</td>
</tr>
<tr>
<td>Servilok System</td>
<td>Incorporated with Servisleeve and Serviwrap R &amp; T series.</td>
<td></td>
<td></td>
<td>Temperate &amp; Tropical</td>
<td>Coverage: approx 375 cm² per tube</td>
<td>40ml tube</td>
</tr>
<tr>
<td>Serviwrap G45 Petrolatum Products</td>
<td>Buried line pipe, pipework, field welds and pipe fittings.</td>
<td>Tape &amp; Blankets</td>
<td>1.15mm</td>
<td>Temperate &amp; Tropical</td>
<td>100, 150mm, 300, 450, 500, 600mm or to order</td>
<td>Tape - 10m, Blankets - 1m or to order</td>
</tr>
<tr>
<td>Serviwrap Moulding Putty</td>
<td>Mould around awkward shapes of fittings, etc. To obtain a more suitable profile for wrapping.</td>
<td>Filling capacity: 660cm³ per kg</td>
<td></td>
<td>Individual sections approx 50mm square x 300mm long</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serviwrap Primer AB</td>
<td>Normally required prior to application of Serviwrap A &amp; B grade tapes and moulding putty.</td>
<td>Brush</td>
<td></td>
<td>Temperate &amp; Tropical</td>
<td>7.5m² per litre</td>
<td>Containers</td>
</tr>
<tr>
<td>Serviwrap Primer CF</td>
<td>Required prior to application of Serviwrap C, D, E or F grade tapes.</td>
<td>Brush</td>
<td></td>
<td>Temperate &amp; Tropical</td>
<td>Coverage: approx 10m² per litre</td>
<td>1.5, 25, 200 litre</td>
</tr>
<tr>
<td>Servisleeve Primer</td>
<td>Required prior to application of all grades of Servisleeve.</td>
<td>Brush</td>
<td></td>
<td>Temperate &amp; Tropical</td>
<td>Coverage: approx. 10m² per litre</td>
<td>1.5, 25 litre</td>
</tr>
<tr>
<td>Servishield Type A</td>
<td>Rock shield for pipeline coatings for both buried and submarine use.</td>
<td></td>
<td>3.20mm</td>
<td>Temperate &amp; Tropical</td>
<td>685mm or to order</td>
<td>10m or to order</td>
</tr>
<tr>
<td>Sliptrak</td>
<td>Protects pipeline coatings against damage from attached fittings, eg. pipe supports/ sacrificial anodes.</td>
<td></td>
<td>2.90mm</td>
<td>Temperate &amp; Tropical</td>
<td>152, 305mm</td>
<td>15m</td>
</tr>
<tr>
<td>Serviflex A</td>
<td>Provides controlled cracking of concrete on weight coated submarine pipelines.</td>
<td></td>
<td></td>
<td></td>
<td>Triangular section: Base 38mm Height 19mm</td>
<td>100m</td>
</tr>
</tbody>
</table>
**Serviwrap Typical Projects**

*From Norway to Nigeria ... Iran to Indonesia ... Australia to the United Kingdom - Serviwrap protects thousands of kilometres of buried and submarine pipe on many prestigious projects.*

A selection of international projects where Serviwrap has been successfully employed:

**Offshore**
- Statoil, Development 800km, Offshore Norway
- Esso/Corporate 200km, Offshore UK
- StatOil, St. Fergus 300km, Offshore UK
- Maersk Oil, Shell/Esso
- Total

**Onshore**
- Gas Transmission 1000km, Frigg, UK
- Oil Products 450km Mainline, UK
- Water Supply 40km Al Khair, Saudi Arabia
- Water Injection 250km Wasia, Saudi Arabia
- Gas Transmission 90km, Sweeden
- Oil Pipeline, Marmul, Oman
- Etherine/Eshtene Oil Pipeline, Mossmorean, Scotland
- Fuel Oil Supply, Alhoud, Kuwait
- Oil Pipelines, Qatif-Rahama, Saudi Arabia
- Artafield Fuel Hydrant Lines, Nigeria
- Gas Transmission 200km Cork-Lahore, Ireland
- Oilfield Development 45km Humbly Grove, UK
- Gas Gathering Pipelines, Bonnang, Indonesia
- Seling to Trans 17km x 36" & 15", UK
- Long Sea Outfall, Lum Bay, Hong Kong
- Water Supply Pipelines, Jubail Industrial City, Saudi Arabia
- Birmingham Airport Link, UK
- Aviation Fuel Supply to Jakarta Airport, Indonesia
- Replacement of Delta Gas Transmitta, Australia
- Pipelines and Depots project 670km, Nigeria
- Sewerage Disposal, Al Hasa, Saudi Arabia
- Gas Transmission Pipeline, Meppel, Holland
- Aviation Fuel Supply, Gatwick Airport, UK

**Oil, Gas & Petrochemical Installations**
- Flotta Terminal, The Orkneys, UK
- Mobil Refinery at Wilhamsfalen, Germany
- Nedza Gas Plant, Saudi Arabia
- Compressor Station at Cambridge, UK
- NGL Plant at Mossmorean, UK
- Eastington Terminal, UK
- Elmedan Terminal, Germany
- Gas Oil Separation Plants, Saudi Arabia
- Kishon Power Station, Iran
- LNG Plant for Kuwait Oil Company, Kuwait
- Bandar Abbas Refinery, Iran
- Yubari Petrochemical Project for Mobil, Saudi Arabia
- Umm Said Refinery for Qatar Gas Co, Qatar
- Tomsk & Bugahaya Methanol Plants for Techchemimport, USSR
- Rahib Refinery for Petronia, Saudi Arabia
- Surincha Refinery, Thailand

**Typical of the major projects on which this highly efficient anti-corrosion pigswrap has been used are:**
- Onshore Oil - ESSO MIDLINE (pictured above) - in 1985 the field joints on over 200 kms of this 14" diameter pipeline running from Birmingham to Southampton were protected with Serviwarp R30 pigswrap.
- Offshore Gas - AMOCO CATS - in 1991/2 the field joints on 395 kms of 36" diameter concrete weight coated pipeline were protected with Serviwarp M30 under hot poured mastic asphalt inlith
- Water Projects - on the Rivington Aqueduct project for the North West Water Authority in 1990/91 the barrels of over 12km of 40" ductile iron pipe were factory wrapped with Serviwarp T30 and overseas, in Kuwait in 1990/91, over 200 kms of 48" & 64" ductile iron pipe were wrapped at site by static "roller-tug" machine on the Az-Zour Water Pipeline also using Serviwarp T30.