

DENSO DIGEST

Winn & Coales International Ltd

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Denso®

LEADERS IN CORROSION PREVENTION
& SEALING TECHNOLOGY

WINN & COALES INTERNATIONAL

For further information on our products and their suitability for your particular project, please contact any of the Denso companies listed below:

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✓ Corrosion prevention and sealing systems
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Fax: +44 (0) 20 8761 2456
Email: mail@denso.net
Website: www.denso.net



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This special issue of the Denso Digest celebrates the 90 year anniversary of Denso Protective Coating Systems supplied by Winn & Coales.

In 1929 Winn & Coales secured a license from Germany to import and market Denso products into the United Kingdom and in 1933 built a new London based manufacturing plant.

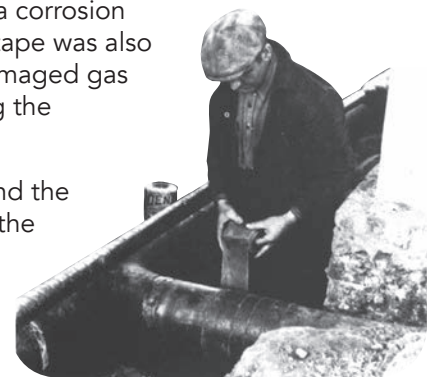
Mainly due to the proven long-term effectiveness and easy application criteria, Denso Petrolatum Tape continues to be used extensively today.

The following pages show a few examples of the multitude of successful Denso Tape applications carried out worldwide over the past 90 years.

Denso Petrolatum Tape - The Early Years

During the early years after its introduction to the UK, it wasn't long before Denso Petrolatum Tape was found to be versatile and it was used for many sealing applications. Apart from its main use as a corrosion prevention coating for pipes and steelwork the tape was also used for gasproofing rooms, repairing bomb damaged gas mains and waterproofing military vehicles during the Second World War.

Due to its growing popularity with the utilities and the building industry it was also used extensively in the massive task of rebuilding Britain after the war during the 1950's.



Protecting gas and water mains.



A pipeline is replaced during the rebuilding of London in the 1950's.



Protecting steel beams.

Denso Petrolatum Tape - 1960s Onwards

From the 1960's, helped by the formation of subsidiaries in the USA and Canada as well as partnerships in Australia, New Zealand and South Africa, Denso Petrolatum Tape became widely used around the world.

Gaining a great reputation while developing new world markets...



UK - Protecting buried Viking Johnson Couplings on water pipework at Whorely Reservoir which supplies Darlington and parts of Teeside.



UK - Protecting loading booms at the Esso Milford Haven Refinery, using weatherboard and spiral tape wrapping techniques.



USA - Protecting parts of the steel headframe in the severe corrosive environment of a salt mine at the Cargill Salt Facility, Avery Island, Louisiana.



USA - Protecting constantly sweating steel ammonia tanks at the Lower Colorado River Authority (LCRA) Bastrop facility, Texas.

The pictures below are taken from Denso Tape case histories previously featured in the Denso Digest.

Please Note: These historical pages are for information only. Our recommended corrosion prevention systems are constantly evolving and some of the pictures do not show our most recent developments.



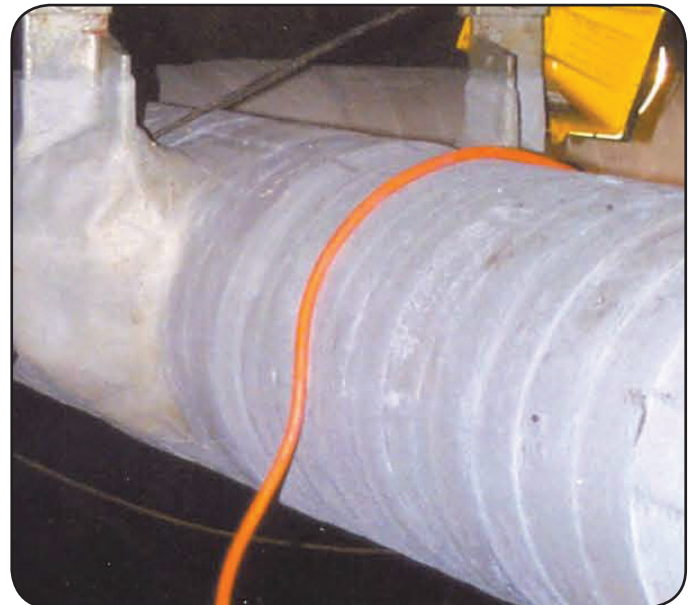
Canada - Protecting buried petroleum pipeline valves for the Sun-Canadian joint venture in Southern Ontario.



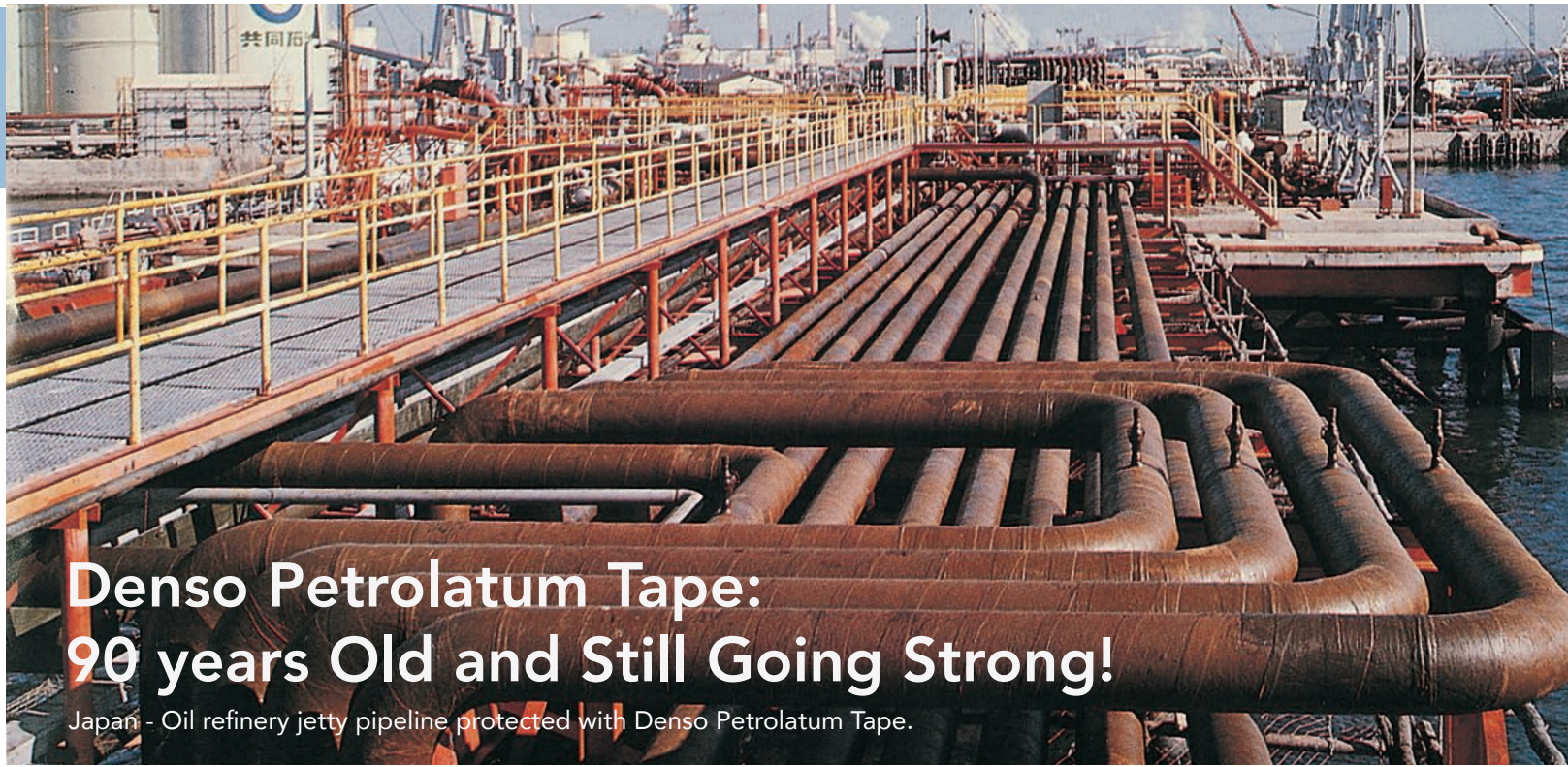
Canada - Protecting a sweating concrete water pipeline in sub zero conditions. Halton Region near Toronto.



South Africa - 30 years of proven, maintenance-free, protection of a huge gantry crane situated in a highly corrosive coastal environment - as part of the Denso Steelcoat™ Systems.



Australia - Protecting United Energy gas pipework and fittings in a confined space under the Spencer Street Bridge in downtown Melbourne.



Denso Petrolatum Tape: 90 years Old and Still Going Strong!

Japan - Oil refinery jetty pipeline protected with Denso Petrolatum Tape.

So the question is, why is Denso Petrolatum Tape still as popular today as it has been at any period during the past 90 years? The answer is mainly due to the following six facts:

1. It is very easy to apply.
2. It is extremely flexible, mouldable and it can be overpainted to create a tough outer armouring.
3. It is surface tolerant and can even be applied over thin layers of tightly adhering rust.
4. It is self-adhesive and adheres to most building materials.
5. It is easily removed to check the condition of the substrate and easily repaired again afterward.
6. Cost effective, once applied in the recommended way it will continue to work and protect for decades.



Flexible and mouldable...



...and easily inspected...



...to check the substrate

The following pages of this Denso Digest show more recent Denso Petrolatum Tape applications from around the world...

Denso™ Protection for Welsh Aqueduct Water Mains

Built in the late 1800's, Lake Vyrnwy reservoir in Powys, Wales supplies over 900,000 residents of Liverpool with up to 210 million litres of water per day.



Denso Profiling Mastic™ is used to create a smooth profile prior to tape wrapping.

The cast iron water mains that were originally installed across the Lake Vyrnwy Aqueduct needed replacing due to the build up of iron and manganese deposits inside the pipes. These deposits could break off from time to time during flow changes causing discolouration of the water.

In a process known as 'slip lining by tie drawing' new and larger pipe liners were stretched and inserted into the original pipes and expanded in place to form the new main.

The Denso™ Petrolatum Tape System was chosen to protect the bolted flanges on the new water main. The system which is applied after cleaning comprises an application of Denso Paste™ followed by Denso Profiling Mastic™ to fill voids and smooth profiles. To complete the system, a spiral wrap of Denso™ Petrolatum Tape using a 55% overlap is applied to give a double layer of protection.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

| | |
|--------------------------|-------------------------------|
| Country: | United Kingdom, Wales |
| Object: | Water main joints |
| Problem: | Corrosion prevention |
| Product Solution: | Denso™ Petrolatum Tape System |



The completed Denso™ Petrolatum Tape System protecting the pipe joints.

Denso™ Petrolatum Tape System Protects Cooling Tower Pipework

Recently Hines, a large real estate developer, acquired the rights to the Wedge Tower in downtown Houston, TX.

After inspection it was concluded the cooling tower would have to be rebuilt and the piping replaced due to corrosion.

Due to past successes they have experienced with Denso on numerous cooling towers over the years, the decision was made to again use the Denso™ Petrolatum Tape System to provide long term corrosion prevention on all of the piping, valves, flanges, etc.

After a short on-site training session with a Denso representative, the contractor MFR Fluid & Air was able to install the Denso™ Petrolatum Tape system quickly and easily much to their satisfaction. The scope of work consisted of minimal surface preparation (SSPC SP-2/SSPC SP-3), followed by the application of a thin layer of Denso Paste S105™, Densyl™ Tape with a 55% overlap, and a protective layer of Denso HDPE Outerwrap™.



Archco 15™ Acrylic Topcoat is brush applied onto Densyl™ Tape protecting a valve flange as a top coat.



A large pipe tee joint wrapped with Densyl™ Tape prior to the application of Archco 15™ Acrylic Topcoat. The Denso HDPE Outerwrap™ is shown on the connected pipes.

PROJECT SUMMARY

Product type:
Coatings for Exposed Steel

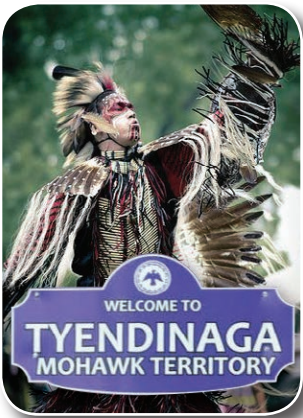
| | |
|-------------------|--------------------------------|
| Country: | United States of America |
| Object: | Cooling tower pipes |
| Problem: | Corrosion prevention |
| Product Solution: | Densyl™ Petrolatum Tape System |

For irregular areas such as flanges and valves, Denso Profiling Mastic™ was also applied to provide a smooth profile to tape over and then top coated with the Archco 15™ Acrylic Topcoat in place of the Denso HDPE Outerwrap™.

Another successful application gave the developer and contractor confidence the life of their cooling tower piping will be extended while preventing corrosion for many years to come.

Denso™ Protects Canada's Indigenous Infrastructure

Recently, the Mohawks of the Bay of Quinte undertook a substantial watermain replacement project in the area of Tyendinaga which is located along the shores of the Bay of Quinte, approximately 200km east of Toronto.



As part of the strategy for prolonging the life of the buried metallic components of their waterworks system, First Nations Engineering Services specified the use of Denso Paste™, Denso Profiling Mastic™ and Densyl LT™ Petrolatum Tape.

| PROJECT SUMMARY | |
|--|-----------------------------------|
| Product type: Coatings for Buried Steel | |
| Country: | Canada |
| Object: | Water main joints |
| Problem: | Corrosion prevention |
| Product Solution: | Densyl LT™ Petrolatum Tape System |

With the Denso™ Petrolatum Tape System celebrating 90 years in service to industry, it was an honour to be included in the plans to protect the infrastructure of one of Canada's oldest communities dating back to a time when their ancestors arrived from Quebec in 1784.

During the turbulent times of the formation of Canada and the establishment of independence, the Mohawks were military partners of the British Crown. Fighting as allies during the American Revolution, some of the bloodiest battles took place in the Mohawk Valley.

Now in peaceful times, the Mohawks of the Bay of Quinte continue to prosper and grow as Denso North America and the Denso LT Petrolatum Tape System continue to provide long-term protection for the life blood of these and many other Indigenous Communities throughout Canada.

Applying Denso Profiling Mastic™ to the pipe joints prior to wrapping with Denso LT™ Tape.



Water hydrant supply pipework protected with the Denso LT™ Petrolatum System.

The Denso Steelcoat 400™ System Protects Middle Eastern Jetty Pipeline

A modified Denso Steelcoat 400™ System designed to cope with the elevated ambient temperatures found in the Middle East has again been successfully used for the protection of jetty pipes.



First a coat of Denso Paste™ is followed by a spiral wrap of Densyl™ Petrolatum Tape.



After applying a spiral wrap of Denso Ultraseal RT™ Tape, two coats of Denso Acrylic Topcoat™ completes the pipe protection system.

PROJECT SUMMARY

Product type:
Coatings for Exposed Steel

| | |
|-------------------|-----------------------------|
| Region: | The Middle East |
| Object: | Jetty pipeline |
| Problem: | Corrosion prevention |
| Product Solution: | Denso Steelcoat 400™ System |

The environmental conditions where the pipes are located are very harsh with salty, hot seawater spraying onto the piping, combined with extreme high ambient temperature and humidity.

Due to these harsh conditions the project consultant decided that the best solution for the long-term protection of the pipes was a modified Denso Steelcoat™ System. The modified system comprises a coat of Denso Paste™ overwrapped with Densyl™ Tape using a 55% overlap. This was then followed with a wrap of Denso Ultraseal RT™ Tape using a 55% overlap which was then coated with two coats of white Denso Acrylic Topcoat™.

Denso™ Protection Still Good After 30+ Years Service

Anglo American Platinum is the world’s leading primary producer of Platinum Group Metals (PGMs). They provide a complete resource-to-market service, supplying their network of global customers with a range of mined, recycled and traded products.

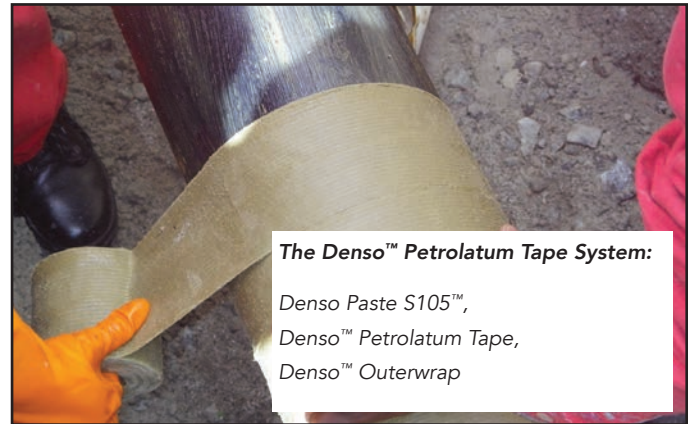
An inspection was recently carried out of Anglo American Platinum’s plant fire water mains that were installed in 1988, to determine the condition of the pipework. When the mains were originally installed they were protected by the Denso™ Petrolatum Tape System and the condition of the pipework is an important assessment to safeguard fire water availability and to conduct possible maintenance caused by corrosion after 25+ years.



The original Denso™ system had probably been damaged by backfill.

Three areas were marked up for excavation and the results of these excavations would determine the remedial action going forward.

| PROJECT SUMMARY | |
|--|-------------------------------|
| Product type: Coatings for Buried Steel | |
| Country: | Republic of South Africa |
| Object: | Buried water fire main |
| Problem: | Corrosion prevention |
| Product Solution: | Denso™ Petrolatum Tape System |



The Denso™ Petrolatum System was applied to protect the pipe.

All three excavations found the Denso™ Outerwrap to be slightly damaged which was presumably caused by the backfilling of the trench. No damage was noticed on the Denso™ Petrolatum Tape inner wrap which was still found to be saturated with the petrolatum compound.

The entire coating system was removed and the pipe surface was cleaned. No corrosion whatsoever was evident after 30+ years since it’s installation in 1988.

The inspections reflect an excellent coating system which was applied as per the specification. This highlights the importance of recommending the correct coating system and applying the material in strict accordance with the specification.

Recently a 6” tie-in was installed and wrapped for a new fire water system installation at the Main Store using the original system supplied back in 1988!



The new tie-in protected with the the Denso™ Petrolatum Tape System.

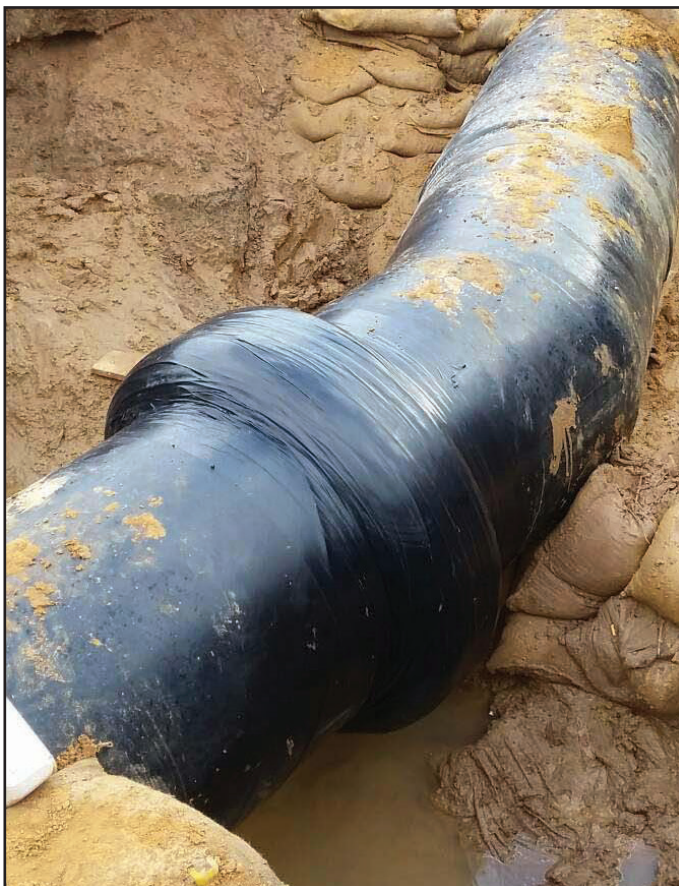
Denso™ Protection for Water Pipeline Flanges

For the installation of a new water pipeline located along Symes Road, Waterloo Corner, SA Water specified the Denso™ Petrolatum system to protect its two new flanges. Civil Tech Consulting Engineers and Trility were commissioned to complete the works as per SA Water's TS 18 specification.

This project is part of the redirection of the sewer for the upcoming extension of the South Road Expressway.

SA Water now requires that all applicators of Denso™ materials be trained and accredited as part of their QA system.

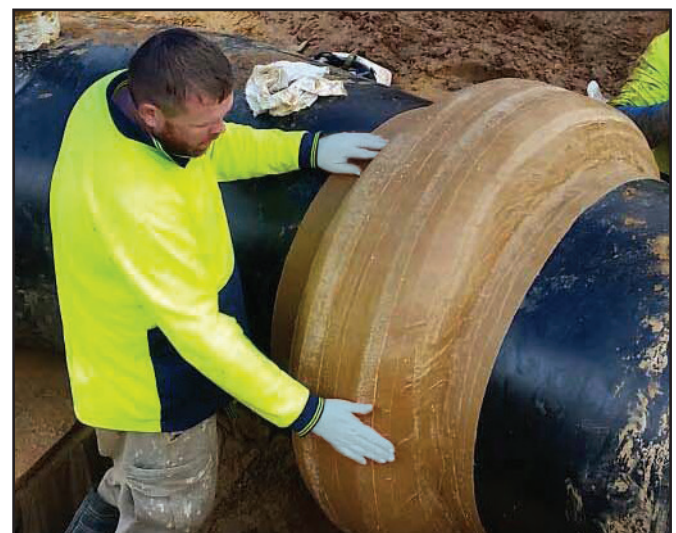
The Denso™ Petrolatum Tape System was the ideal product for this project due to its durability and expected long-term life span.



A wrap of Denso PVC SA™ Tape completes the system.

| PROJECT SUMMARY | |
|--|-------------------------------|
| Product type: Coatings for Buried Steel | |
| Country: | Australia |
| Object: | Water main joints |
| Problem: | Corrosion prevention |
| Product Solution: | Denso™ Petrolatum Tape System |

Below: Denso Profiling Mastic™ is used to create a smooth profile for wrapping.



Above: Denso™ Petrolatum Tape is spirally wrapped around the bolted flange.

Denso™ Protection for BASF Fire Water Main

BASF - India's chemical production complex at Dahej, Gujarat - commenced operations in October 2014. At approximately INR10bn (\$180m), it is the biggest investment made by BASF in India.

The complex is located at the 453km² Dahej Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR). The chemical complex integrates polyurethane manufacturing facilities, as well as production facilities for care chemicals and polymer dispersions to cater for the growing appliances, footwear, automotive,

construction, coatings, paper, home and personal care industries.

The Dahej area is highly corrosive due its coastal location and industrial belt. Due to severe corrosion failures especially for buried pipes, the client wanted



Denso Paste™ is applied to the cleaned pipe surface.



Densyl™ Petrolatum Tape is circumferentially applied over the Denso Paste™.



A wrap of Densopol 60HT™ Tape is applied to complete the system.



A completed section of pipe.

PROJECT SUMMARY

Product type:
Coatings for Buried Steel

| | |
|-------------------|--------------------------------------|
| Country: | India |
| Object: | Fire water main |
| Problem: | Corrosion prevention |
| Product Solution: | Densyl™ Tape / Densopol™ Tape System |

a fool-proof system which will protect the new fire water lines from any external elements.

A consultation with the site head and engineering team was organised, where a demo installation was provided along with an overview of our products and services. Once the client could see how easy it was to apply the system, which consisted of Denso Paste™, Densyl™ Tape and Densopol 60HT™ Tape, it was approved for all pipes.

If you would like more information about our long-term corrosion prevention and sealing systems that deal with the problem areas listed below, simply tick the boxes and send us back this completed page and we will supply you with more information.

BURIED ONSHORE COATINGS

SUBSEA & SPLASH ZONE COATINGS

SEALING MASTICS

- External corrosion prevention for underground pipelines, welded joints, valves and fittings.
- Protection of mounded LPG vessels and fuel tanks.

- Maintenance corrosion protection for steel jetty piles.
- Subsea pipelines and outfalls.
- Protection of timber and concrete piling.

- Joint sealing of precast concrete manholes and culverts.
- Joint and crack sealing of asphalt road surface wearing courses.
- Joint sealing for airport runways.
- Sealing of cable entry ducts.

EXPOSED SURFACE COATINGS

INDUSTRIAL LININGS

INDUSTRIAL TAPES

- Corrosion prevention for chemical plant, structural steelwork, above ground pipes, storage tanks, offshore rigs, bridges and support cables, cranes and pipe bridges.
- Corrosion prevention for metal roof purlins and metal roof sheets.
- Protecting pre-stressing and post tensioning bridge cables and ground anchorages.

- Internal linings for tanks, pumps, vessels and pipelines.
- Linings for concrete bunds and floors.
- External abrasive wear protection.

- Sealing and insulating.
- Protecting and bonding.

MEMBRANES AND FLASHINGS

DIY WEATHERPROOFING

- Tanking / waterproofing.
- Exposed rooftops and parapets.

- Waterproofing and flashing.

For further information - tick boxes, fill in coupon and email or post to your nearest Denso branch (full list of addresses on page 2)

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