

WINN & COALES INTERNATIONAL LTD

Denso
Digest



Archco-Rigidon Rigspray lining protects Korean nuclear plant debris filter - see story page 8.

QUALITY & INNOVATION FROM 1883 INTO THE 21ST CENTURY



WINN & COALES INTERNATIONAL LTD

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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 ✓ Anti-corrosion and sealing systems

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ARCHCO-RIGIDON

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 ✓ Corrosion resistant linings

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DARTFORD COMPOSITES LTD

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 ✓ Manufacture and repair of FRP panels for cars and trains

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Sealing Mastics - Flexible Waterproof Jointing

Densoband joint Seal for 18,000m² Swan Shopping Centre Car Park

London based Guaranteed Asphalt Ltd recently specified Densoband as an integral part of the flexible upstands, in conjunction with their Guaraflex polymer modified mastic asphalt system, on the 18,000m² asphalt car park situated on the roof of the Swann Centre, Eastleigh, Hants

Densoband is totally compatible with mastic asphalt and high performance bitumen membranes. It has many applications in conjunction with mastic asphalt roofing and paving. In consequence, Guaranteed Asphalt use Densoband on all Guaraflex polymer modified asphalt roofing and paving projects.

At the Swan Centre car park Densoband was used as a flexible fillet, sandwiched

between the high performance membrane at the junction between the horizontal and vertical waterproofing planes. The flexibility of Densoband allows structures to move at this crucial junction without cracking.

Densoband is a polymer modified bitumen strip which is approved by the Department of Transport in the Manual of Contracts 7th Edition, for use in asphalt wearing course joints

To enable quick identification of the subject matter within each story in this brochure we have adopted the following colour codes.

PROJECTS INVOLVING:	
PROTECTIVE COATINGS FOR.....	
■	BURIED PIPELINES & LPG VESSELS
■	EXPOSED STEEL & PIPEWORK
■	SUB SEA PIPELINES & JETTY PILES
PROTECTIVE LININGS FOR.....	
■	STORAGE TANKS, PUMPS ETC
SEALING & WATERPROOFING.....	
■	SEALING MASTICS
■	MEMBRANES & FLASHINGS
■	INDUSTRIAL TAPES

for asphalt and asphalt to concrete interface, as an alternative to the previously commonly used bitumen. It is also approved by the British Airports Authority.

Because water, salts, pollutants and weed seeds etc cannot penetrate the sealed joint, it remains unaffected by extremes of temperature and any consequential deterioration.

Densoband being applied at the junction between the horizontal and vertical planes.



Marine Coatings - Concrete Support and Curing Aid

Denso Polyethylene Outerwrap Helps Support Concrete and Cure on Weight Coated Pipes

Petro South Africa are forging ahead with a 100km subsea gas pipeline off the southern coast of South Africa (Mossel Bay). The 3", 8", 12" & 14" lines are 3 layer polypropylene with concrete weight coating, being applied by Bredero Shaw in Port Elizabeth. The pipes will be loaded onto the laybarge in Port Elizabeth and taken to their deep sea burial site.

Denso SA secured an order for 200,000 sq.m. for the disposable polyethylene outerwrap applied over the concrete weight coatings.

The polyethylene outerwrap is spirally wrapped immediately over the wet concrete to hold it in position whilst controlling the curing time.



Below: The pipes being loaded onto the laybarge.

Above: The concrete weight coated pipes.



Coatings - Concrete bund protection

Archco-Rigidon 703D System Protects a Dangerous Goods Bund Area in Kalgoorlie

Early in January 2005 contact was made from Messer's GHD and Australian National Rail with the requirement to provide protection to a Dangerous Goods Bund area, about to be built in the Western Australian Gold Fields.

After many meetings and much deliberation with engineers (structural, mechanical and civil), architects, asset owners and government authorities, it was determined that the Archco Rigidon 703D System would be used.

The contractor Monadelphous was selected to carry out the whole project as they were the only approved applicator in the goldfields region. However, many obstacles were still to come before the project could commence. In September 2005, engineers had concerns that the soil structure was not compatible for the bund to be built on so tonnes of soil from South Australia (around 2000 kms



Above: Archco-Rigidon 703D system being applied to the concrete bund area.



Above & below: The completed 'Dangerous Goods' bund area.



away) was brought in for the project.

The soil was compacted, the concrete was poured and cured for 28 days. The next stage was the application of the Archco Rigidon 703D System but this was delayed because of six weeks of constant rainfalls in Kalgoorlie, a rarity in the middle of the Australian desert. Eventually, the rain subsided, further expert inspections were made and work resumed in June 2006. The 360 square metre bund was successfully completed in July 2006.

Linings - Power plant, sea water pipe

Archco-Rigidon Coatings Solve Pipe Lining Problem at Ha Dong Thermal Power Plant

When the original epoxy lining on the sea water pipe at the Ha Dong Thermal Power Plant started to peel the deterioration of the lining became accelerated due to the water flow in the pipe. Urgent action had to be taken to prevent rapid corrosion of the pipe due to the combination of the damaged lining and the highly corrosive sea water running through it.

To rectify the problem engineers at the plant specified the use of Archco-Rigidon, Archcoat 402B as a replacement for the original epoxy lining.

After the complete removal of the old epoxy lining the Archcoat 402B was applied to the pipe to a thickness of 1mm.

The Archcoat 402B lining is particularly suitable for immersed conditions and is resistant to a wide range of chemicals making it the ideal choice for this application.


After the new lining had been installed the pipe was soon back in service much to the delight of



The old damaged epoxy lining being removed from the sea water pipe.

the plant engineers who were very satisfied with the new Archco-Rigidon lining system.



ARCHCO RIGIDON
Resistant  Materials

The new Archcoat 402D lining being integrity tested shortly before the seawater pipe is put back into service.

Linings - Gas Corporation's sea water intake pipe

Archco-Rigidon Rigspray used to line Korea Gas Corporation's Sea Intake Pipeline

The Korean Gas Corporation recently chose Archco-rigidon Rigspray to line their sea water intake pipeline. Rigspray was chosen for its protective qualities which are particularly effective in marine environments.



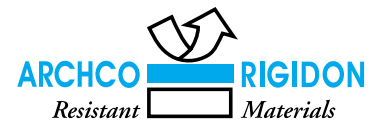
The Rigspray lining was applied in a single coat to the internal surfaces of the sea water intake pipeline to a thickness of 1mm.

Rigspray is a long lasting, single coat, anti-corrosion system that can be used on all structures and pipework where protection against severe marine environments is required

The Korean Gas Corporation were so pleased with the finished application that they have specified Rigspray to be used on all new equipment installed at the plant.

Left: Rigspray being applied to the internal surfaces of the sea water intake pipe sections.

Below: The completed pipe sections ready for installation.



Linings - Nuclear Power Plant Debris Filter

Archco-Rigidon Rigspray lining used to protect Nuclear Plant Debris Filter

The Young Kwang Nuclear Plant was experiencing major problems with the rubber linings in its debris filters. The linings were falling off and after fixing them back on again several times, engineers changed the design, instead specifying lining the filters with Rigspray.

Archco-Rigidon Rigspray was chosen because of its impressive corrosion prevention characteristics and speed and simplicity of application.

The Rigspray was applied to the internal surfaces of the filters to a thickness of 1.5mm and the completed linings are now considered a great success as they have completely resolved the difficult problem.



ARCHCO  **RIGIDON**
Resistant  Materials

The debris filters lined with Rigspray.

Corrosion Prevention - Protecting Buried Pipelines

Denso Protection for Canada's Banks and Stock Markets

Canada's major banking and stock market data information is processed at IBM's central processing terminal located just outside Toronto, Ontario.

The electronic information dealt with at this location on a daily basis is paramount to the success of the country's financial

that the coatings selected would be used as a safeguard against possible lightning strikes that could potentially arch from the



Above: 30" gas line protected with Protal 7250 overwrapped with Densopol Tape

markets and to its day to day banking operations. Having a continuous supply of electricity to this area is extremely vital. Having a gas pipeline running underneath this electrical source makes the prospect of protecting both energy sources somewhat of a challenge.

Denso North America was asked by Enbridge Gas and Hydro One to provide optimum protection for several hundred feet of a 30inch diameter gas line located directly underneath the main electricity

transmission lines. Enbridge Gas, who operates the pipeline, has one of the largest natural gas distribution networks in Canada. Hydro One is the largest electricity supplier and distributor of power within the province. Both parties agreed

transmission line to the gas pipe and cause a huge explosion.

After extensive independent testing of several manufacturers' epoxies and tape wrapping systems, it was agreed by both energy supply companies that Denso Protal 7250 and Densopol 60 be used to protect this crucial area.

Engineered Coatings Ltd., who are a local approved applicator of our Protal 7250 epoxy were contracted to do the work. This involved spraying 60mils of Protal 7250 on the pipe and then triple wrapping Densopol 60 over the epoxy after it had cured.

The project and scope of this work went extremely well over a period of several weeks of hot summer weather. Upon the completion of the entire project, all involved were confident that even if we experienced significant lightning storms, electronic information would continue to flow without incidence thanks to the protection offered by the products manufactured by Denso.

Below: Work in progress beneath the main electricity lines



Corrosion Prevention - Protecting Raw Water Intake Structure

DOE Intake Structure Protected with Denso Petrolatum Tape System

The Strategic Petroleum Reserve (SPR) is an emergency petroleum store maintained by the United States Department of Energy. With 5 locations along the Gulf of Mexico Coast, it is the largest emergency supply in the world with the current capacity to hold up to 727 million barrels (116 million m³) of crude oil.

Emergency crude oil is stored in the Strategic Petroleum Reserve in salt caverns. Created deep within the massive salt deposits that underlie most of the Texas and Louisiana coastline, the caverns offer the best security and are the most affordable means of storage, costing up to 10 times less than aboveground tanks and 20 times less than hard rock mines.

Due to the highly corrosive environment, Denso's Petrolatum Tape products have been used for many years for corrosion protection at all 5 locations in a variety of applications.

Corrosion protection for a large Raw Water Intake structure at the Big Hill Site had been a continual battle for the DOE. After many years of painting the beams, columns and piping network, they selected the Denso Petrolatum Tape System in 1998. After 8 years of outstanding service life, the DOE again selected the Denso materials to complete phase 2 (the second half of the steel structure).

Between the 2 phases of installation, the overall scope included the protection of approximately 4,000 LF of structural steel beams and braces,



Above: Phase 2 - installation of Densyl Tape, Denso Hi-Tack Tape and Denso Utility Tape.

300 LF of 24" and 48" dia. steel support columns and pilings, as well as 1,000 LF of various pipe sizes. Denso materials included the following: 110 cases of Denso Paste S105, 380 cases of Densyl Tape, 65 cases of Denso H-Tack Primer, 200 cases of Denso Hi-Tack Tape, and various other materials.

DOE personnel are very pleased with the Phase 1 service life to date, as their previous paint systems were only lasting 2 to 3 years. Furthermore, the



Above and left: Densyl Tape and Denso Hi-Tack Tape after 8 years service life.

recently completed Phase 2 installation, was completed on time and under budget. The massive steel structure will receive many more years of corrosion protection due to the Denso Petrolatum Tape System.

Corrosion Prevention - Protecting Buried Pipeline

Densoclad Protection for Llanelli Sewage Main

Morrison construction PLC is currently replacing an extensive glass fibre sewage rising main at Llanelli, South Wales, with ductile iron pipework. The project is being undertaken on behalf of Welsh Water in order to upgrade the conveying of sewage from Llanelli to the nearby sewage treatment plant at the Northumberland pumping station.

Morrison's have chosen a Densoclad system installed to a P2 specification for protecting the joints and fittings on the 3675 metre, 900mm diameter ductile iron pipeline. Denso Profiling Mastic and/or Densyl Mastic Blanket are first applied, where required giving a smooth contour to ensure rapid and effective application of the Densoclad 70 Tape.

Densoclad Tape consists of a thick bitumen adhesive laminated to a tough plasticised PVC backing. These cold applied tapes are designed for the long term protection of buried or immersed pipes and fittings.



The completed P2 Densoclad protection.



Above: Laying of the ductile iron pipeline in progress

Left: Stockpiled pipe lengths.