

3M Corrosion Protection Products

Introduction to 3M™ Scotchkote™ Pipe Coatings (formerly COPON Pipe Linings)



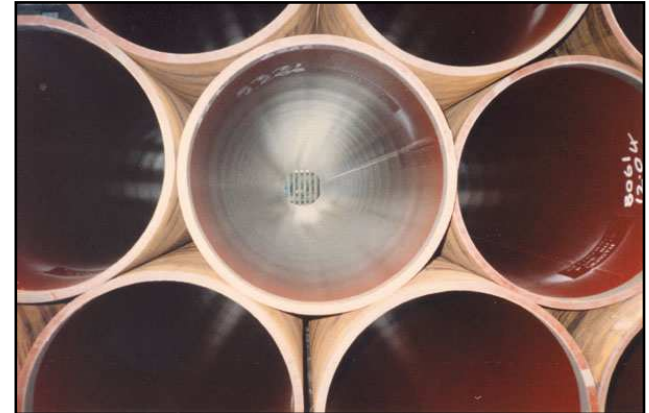
Internal & External Pipe Coatings

Presented by Mick Gribby, 3M E Wood - September 2008



Contents

- Introduction
- Internal flow liner (flow coating) for gas pipelines
- **Internal linings for aviation fuel pipelines**
- Internal lining for drinking and waste water pipelines
- External joint and pipe coating

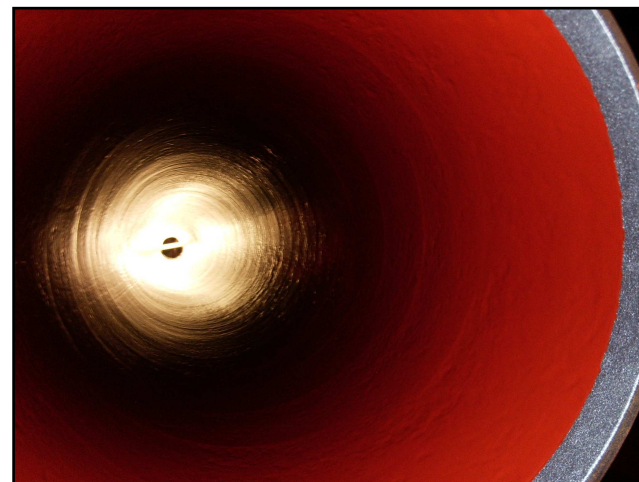


Advanced Polymer Technology since 1882



Introduction to 3M E Wood (formerly COPON Pipelinings)

- Specialises in development and manufacture of liquid internal & external pipe coatings
 - *Pioneers of Internal Flow Efficiency Coating for Gas Pipelines*
- Queen's Award for Enterprise (2006)
- ISO 9001 / ISO 14001 Accredited
- Over 45 year's experience serving Pipeline Industry
- Export to over 85 countries worldwide
- Supported by use in over 140,000 km of pipelines –
 - *Gas, Oil, Water, Aviation Fuel, Petrochemical*



Innovative Research



Quality Systems

- **ISO 9001**

- *More rigorous than ISO 9002*

- **ISO 14001**

- *Environmental Management*



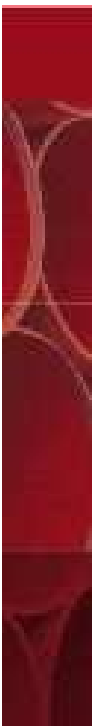
Advanced Technology

Innovative Research

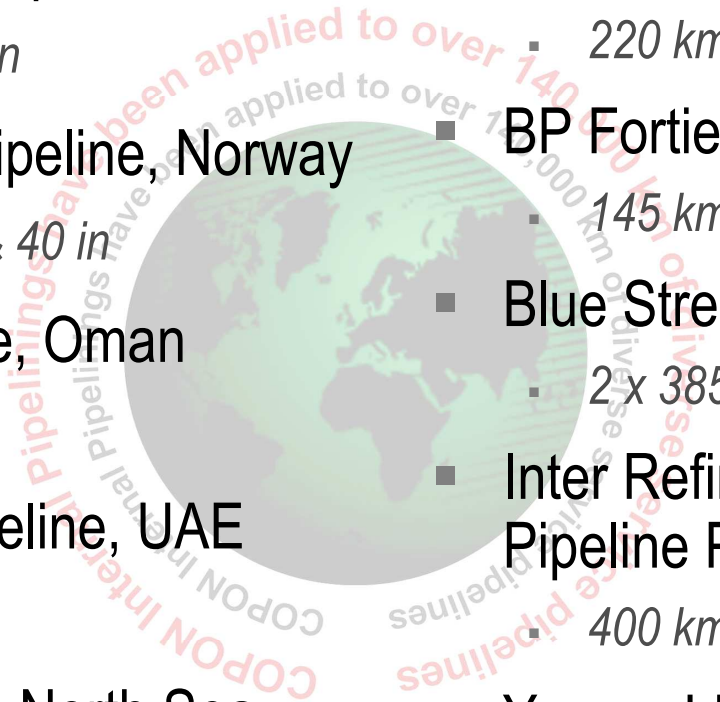


Award Winning

Core Pipe Coating Products

- 
- Scotchkote EP2306 Series (formerly Copon EP2306 Series)
 - *Internal Flow Coatings for Gas Pipelines*
 - 48%, 75% and 100% Solids versions available
 - **Scotchkote EA4 2217 (formerly Copon EA4 2217)**
 - *Internal Lining for Aviation Fuel Pipelines*
 - Scotchkote 162 PWX (formerly Copon Hycote 162 PWX)
 - *Internal Lining for Drinking Water Pipelines*
 - Scotchkote 162 HB (formerly Copon Hycote 162 HB)
 - *Internal Lining for Sea Water, Processed Water, Waste Water*
 - Scotchkote 165 Series (formerly Copon Hycote 165 Series)
 - *External Joint Coating & Pipe Protection for Diverse Service Pipelines*

Typical Worldwide Pipeline Projects

- 
- 
- West-East Gas Pipeline, China
 - 4,200 km x 40 in
 - Langeled Gas Pipeline, Norway
 - 1200 km x 30 & 40 in
 - Salahlah Gasline, Oman
 - 700 km x 28 in
 - Dolphin Gas Pipeline, UAE
 - 370 km x 32 in
 - Statoil Pipelines, North Sea
 - 2000 km x 48 in
 - Balgzand Gas Pipeline, Holland
 - 220 km x 36 in
 - BP Forties Line, North Sea
 - 145 km x 36 in
 - Blue Stream Pipeline, Russia
 - 2 x 385 km x 28 in
 - Inter Refineries (Aviation Fuel) Pipeline Project, UAE
 - 400 km x 20 in
 - Yemen LNG Pipeline
 - 320 km x 36 in (External Joints)

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Internal Lining for Aviation Fuel Pipelines

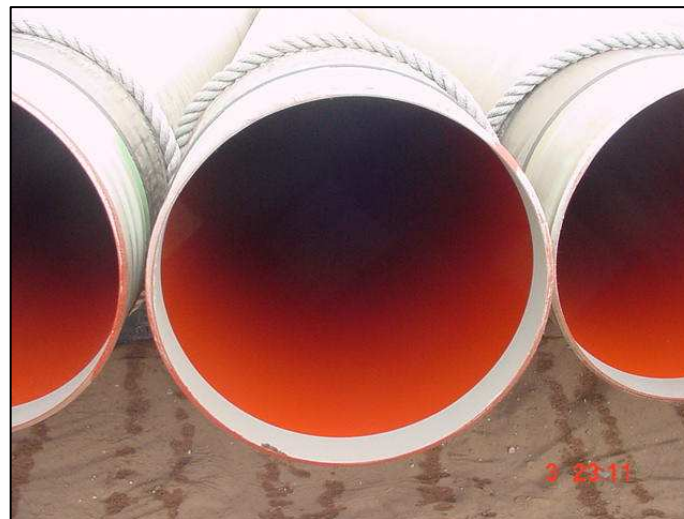


Internal & External Pipe Coatings



Scotchkote EA4 2217 Internal Lining for Aviation Fuel Pipelines

- 55% Solids product
- Film build: 125 microns dft in a single coat
- Also suitable for mixed / refined product service
- Application of one-coat of Copon EA4 2217
 - *Two-component solvent based epoxy*
- Approval for contact with Aviation Fuel – Major Oil Companies – Air BP, SHELL...



Scotchkote EA4 2217_(continued...)

■ International practice is to internally coat Aviation Fuel and Mixed Product Pipelines:

- *Product Purity – sealed surface – no contamination to product*
- *Corrosion protection - storage and commissioning*
- *Easier product switch*
- *Improved product flow: 5-20%*
- *Pigging – efficient. Product purity maintained Risk of removing mill scale and debris with un-coated pipe*



Scotchkote EA4 2217– Summary

- Fully approved by Air BP, SHELL...
 - *Strict leaching tests carried out*
- Worldwide use
- Simple, single coat application, 125 microns dft
- Low cost – single coat, low dft
- Allows for bending at site of coated pipes – saving in fittings
- International practice – not to coat joints



Worldwide Pipeline Projects

- 
- Jubail-Dubai Airport
 - *60 km x 10 in*
 - *Jet A1 Aviation Fuel*
 - Exxon Midline Pipeline
 - *Hundreds of kilometres*
 - *Mixed Product*
 - Kawasaki Steel – Japan
 - *250 km x 10 in*
 - *Jet A1 Aviation Fuel*
 - Schiphol Airport
 - *15 km x 8 in*
 - *Jet A1 Aviation Fuel*
 - Mossmorran Pipeline
 - *50 km x 18 in*
 - *Mixed Product*
 - Stockholm Jet Fuel Pipeline
 - *25 km x 12 in*
 - *Jet A1 Aviation Fuel*
 - THAPP Thailand Pipeline
 - *234 km x 24 in*
 - *Mixed Product*
 - Melaka-Klia Shell Pipeline
 - *Hundreds of kilometres*
 - *Multi Products*
 - Esso Petroleum Pipeline
 - *400 km x 12 in*
 - *Petroleum Product*

Other Major International Airports:

- 
- East Midlands (UK), Luton (UK),
 - Tokyo (Japan),
 - Moscow (Russia),
 - Jeddah & Riyadh (Saudi Arabia), Munich (Germany), Bruseels (Belgium), Vienna (Austria), Paris (France), Olso (Norway),
 - Hong Kong
 - and various airports in South Africa, India, USA, Switzerland and Italy

UK Royal Air Force/Military/NATO Bases:

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- Lakenheath, Alconbury, Marston, Waddington, Cottesmore, Mildenhall, Wattisham, Wyton, Abingdon, Brize Norton, St Mawgan, Hannington, Marham, Finningley, Binbrook, Coltishall and Boscombe Down, Belize, Limassol, Sardinia