

**PROTECTIVE COATINGS**

*solutions that cover your needs*



**SIGMA  
COATINGS**

A PPG Brand

**SIGMA***Line*

Pipeline Range



PPG Protective & Marine Coatings



# The SigmaLine Pipeline Range

## PPG Protective & Marine Coatings

*Unrivalled performance and protection*

*PPG Protective & Marine Coatings (PMC) is a world leader in protective and marine coatings.*

*We create proven products that protect customers' assets in some of the world's most demanding markets including:*

- Civil building
- Infrastructure
- Offshore
- Petrochemical
- Power
- Rail
- Marine new-build
- Marine dry dock
- Marine sea stock

*Our coatings are unrivalled in performance and protection among asset owners, contractors, fabricators and applicators across the globe, helping customers meet the challenges they face today, and tomorrow.*

*Experience, innovation and integrity – that's what makes PMC the ideal coatings partner.*

**Sigma Coatings' products offer outstanding solutions to meet the customers' needs.**

### The SigmaLine range offers coating solutions

- with proven performance in the most extreme situations
- whether pipes are thermally insulated, buried or submerged
- for maximum internal and external corrosion protection
- used in a wide temperature resistance range
- with ease of application and consistent quality
- including phenolic epoxy coatings that withstand high temperature applications
- that enhance efficient gas flow

### Protective Coatings solutions for your pipeline requirements

Pipe	Temperature	Gas	Oil	Water
External	< 60°C/140°F	SigmaLine 859	SigmaLine 859	SigmaLine 859
	< 60°C/140°F	SigmaLine 855	SigmaLine 855	SigmaLine 855
	< 60°C/140°F	SigmaLine 2000	SigmaLine 2000	-
	< 60°C/140°F	SigmaLine 2500	SigmaLine 2500	SigmaLine 2500
Internal	-	SigmaLine 403	SigmaLine 445	-
	-	SigmaLine 533	NovaGuard 840*	SigmaLine 523
	-	-	-	SigmaGuard CSF 575*
	-	-	-	SigmaGuard CSF 585*

\* See SigmaGuard tanklining range brochure

**All these pipeline coatings – except the highly specialized SigmaLine 403 and SigmaLine 445 – are solvent free, reducing explosion risk, fire hazard and improving working safety.**







### SigmaLine 2500

#### Solvent free phenolic epoxy coating for pipe externals

As one coat system with proven results in the toughest conditions, SigmaLine 2500 offers high resistance to cathodic protection as well as resistance to a wide range of chemicals and solvents. SigmaLine 2500 is designed especially for pipe mill applications where speed of cure is key. The product is dry to handle in 10 minutes, which equates to around 20 field joint coating application an hour. SigmaLine 2500 can be applied by airless spray to rotating pipes at a substrate temperature over 100°C/212°F while achieving a dft of 600 µm. The system has been tested and approved to Saudi Aramco APCS 113 standard.

- Fast curing especially when applied to a preheated substrate
- Good resistance to cathodic protection at elevated temperatures
- Glossy and smooth appearance
- Excellent adhesion to FBE/steel
- Good adhesion to PE/PP

### SigmaLine 2000

#### Solvent free phenolic epoxy coating for pipe externals

As one coat system, suitable for demanding work like bell holing, SigmaLine 2000 is an extremely tough and durable system offering long term external protection of pipelines operating at temperatures above 60°C/140°F. SigmaLine 2000 can be applied by standard single feed airless equipment making it the ideal choice for pipeline rehabilitation. It can even be applied to hot substrates up to 90°C/194°F. The system has been tested and approved to Saudi Aramco APCS 113 standard.

- Excellent resistance to cathodic protection at elevated temperatures
- Glossy and smooth appearance
- Can be applied by heavy duty single feed airless spray (60:1)
- Excellent adhesion to FBE/steel
- Good adhesion to PE/PP

Solvent free phenolic epoxy has proven to perform in those areas where conventional coatings do not. Even with cathodic protection, phenolic epoxy offers temperature resistance over 100°C/212°F - the inlet temperatures of many buried exterior or subsea pipelines. Original trials over 3 years show that solvent free phenolic epoxy outperforms conventional epoxy, FBE and solvent free polyurethane, by demonstrating excellent cathodic disbondment resistance at high temperatures even in wet saline conditions. SigmaLine 2500 and SigmaLine 2000 are both phenolic epoxy coatings.





# The SigmaLine Range



## SigmaLine 859

### Solvent free polyurethane tar coating for pipe externals

A classic combination of benefits makes this highly versatile solvent free coating an effective and economical choice. As well as excellent corrosion resistance SigmaLine 859 provides strong resistance to abrasion and water, ensuring a long and reliable service. Application is by twin feed hot airless spray. Due to a fast curing time, the coating is dry to handle in just one hour at 20°C/68°F, leaving a distinct black gloss finish.

- One coat directly to steel
- Tested according to DIN 30671
- Fast curing, in only 3 minutes when applied to preheated substrates
- Good abrasion and impact resistance
- Glossy and smooth appearance

## SigmaLine 855

### Solvent free polyurethane coating for pipe externals

Developed for high quality protection, SigmaLine 855 is used in a wide range of applications. SigmaLine 855 is certified to GBE/CW6 Part 1. With superb corrosion resistance, high level of abrasion, water and impact resistance, SigmaLine 855 is a proven performer. Excellent adhesion ensures reliability. This fast curing coating is dry to handle in one hour at 20°C/68°F and reduces repair and maintenance times. SigmaLine 855 is available in blue, grey and red brown.

- One coat system directly to steel
- Certified by Shell Global Solutions according to EN 10290
- Fast curing, in only 3 minutes when applied to preheated substrates
- Good abrasion and impact resistance
- Glossy and smooth appearance

Solvent free polyurethane coatings have proven to be one of the most versatile and reliable coating systems for the exterior protection of pipelines. Polyurethane systems will endure all mechanical abuse from pipe handling, pipe laying and operation. The very nature of these liquid applied coatings allow field joint repair with the same original material, ensuring an overall pipe protection with one and the same material.

A large number of pipelines are operational for extended periods, progressing in their planned life cycle. To avoid corrosion damage and reduce reliance on cathodic protection systems more and more pipelines are excavated for inspection and repair. Two component, liquid applied polyurethanes have been identified as the best combination of a convenient in-situ repair system while providing optimal corrosion protection.





### SigmaLine 533

#### Solvent free epoxy flow coating for internal natural gas pipelines

The glossy finish of the solvent free SigmaLine 533 will minimize friction of transported pressurized natural gas. Due to less pressure loss, a faster, more efficient gas flow will result in significant cost savings. SigmaLine 533 provides a high level of corrosion protection and meets API specification RP 5L2 fourth edition. SigmaLine 533 is developed with the latest innovative solvent free epoxy technology.

- Reduces frictional resistance in gas pipelines resulting in significant cost savings
- Resists baking of exterior applied FBE epoxy
- One coat system directly to steel
- Glossy and smooth appearance, easy to clean
- Can be applied by heavy duty single feed airless spray (60:1) at temperatures from 5°C/41°F and above

### SigmaLine 403

#### Epoxy flow coating for internal natural gas pipelines

A specialist one coat solution that reduces frictional resistance for purified natural gas pipelines. The result, a faster, more efficient gas flow resulting in cost savings due to less pressure loss. SigmaLine 403 provides a high level of corrosion protection and meets API specification RP 5L2 third edition. SigmaLine 403 has been used in gas pipelines with excellent results after being in service for over 25 years.

- Reduces frictional resistance in gas pipelines resulting in significant cost savings
- Glossy and smooth appearance, easy to clean
- Can be applied by heavy duty single feed airless spray (60:1) at temperatures from 5°C/41°F and above
- Approved by Shell Global Solutions and AGIP according to EN 10301
- Resists baking of exterior applied FBE epoxy
- Also available as economic and VOC compliant high solids version

Thin film epoxy flow coats are designed to reduce friction in natural gas transportation pipelines. Although not a corrosive medium, the transportation of dry natural gas pipelines requires a sophisticated coating to protect the steel interiors. Epoxy flow coats ensure that no pipe roughening occurs from corrosion after pipe manufacturing, transport and installation procedures. It needs to endure prolonged storage conditions, pipe bending and resist high gas pressures, mechanical abrasion from inspection gear and exposure to aggressive chemicals such as alcohols, aromatics and lubricants. Epoxy flow coats from Sigma Coatings comply also with all technical and application requirements from pipe coaters meeting their high standards on quality and reliability.

SigmaLine 403 and SigmaLine 533 are epoxy flow coats with proven track records.



Epoxies have been used for decades as the most reliable lining for water tanks and water transportation pipes. Recent legislation developments have identified solvent traces in fresh applied coatings to have possible taste or even health influences. It is for this that Sigma Coatings' products are proactively developed and certified solvent free epoxy coatings for use in potable water storage and supply systems. Sigma Coatings' products follow international standardization developments continuously and cooperates with leading certification institutes to develop state of the art coating systems compliant with the latest legislation.

SigmaGuard CSF 585, SigmaGuard CSF 575 and SigmaLine 523, are solvent free linings for use in potable water supply systems.

### SigmaLine 523

**Solvent free epoxy coating for the internal lining of pipelines carrying potable water**

With resistance against bacterial attack, SigmaLine 523 is approved for potable water by KIWA Holland ref. K12827/01. It is also suitable for carrying a wide variety of chemicals. SigmaLine 523 is fast curing especially when applied to preheated substrates.

- One coat system directly to steel
- Excellent corrosion resistance providing total reliability and high potable water quality
- Good chemical resistance against petroleum products and various chemicals
- Can be applied to rotating pipes at a dry film thickness (dft) up to 600 µm
- Glossy and smooth appearance, easy to clean

### SigmaLine 445

**High build phenolic epoxy in-situ lining for internal pipeline rehabilitation**

As an in-situ applied coating for internal pipe rehabilitation, SigmaLine 445 protects against severe chemical exposure and in high temperature service.

- Excellent corrosion resistance providing total reliability
- Excellent for use in sweet and sour crude, brine and processed petroleum product lines
- Resistant to produced water containing hydrogen sulphide
- Resistant against bacterial attack
- Smooth appearance, easy to clean

Corrosion creates a hazardous situation, which might cause leaks and blow-outs resulting in environmental pollution. Replacement of corroded lines involves enormous costs. The in-situ cleaning and coating process provides a differentiating alternative method to stop the corrosion processes and chemical attack.





# The SigmaLine Range

## SigmaLine 2500

- Fast curing, solvent free phenolic epoxy coating for pipeline externals operating at temperatures above 60°C/140°F

## SigmaLine 2000

- Solvent free phenolic epoxy coating for pipeline external rehabilitation (bell holing jobs) operating at temperatures above 60°C/140°F

## SigmaLine 859

- Fast curing, solvent free polyurethane tar coating for pipeline externals

## SigmaLine 855

- Fast curing, solvent free, British Gas CW6 approved, polyurethane coating for pipeline externals

## SigmaLine 533 (*Amercoat 133PL*)

- Solvent free, API RP5 L2 approved, epoxy flow coating for internal lining of natural gas pipelines

## SigmaLine 403

- Solvent based, API RP5 L2 approved, epoxy flow coating for internal natural gas pipelines

## SigmaLine 523

- Solvent free, KIWA approved, epoxy coating for pipeline internals carrying potable water

## SigmaLine 445

- Solvent based high build phenolic epoxy in-situ coating for internal pipeline rehabilitation resistant to water, crude oil and petrochemical products

*Check with your Sigma Coatings representative for the extensive SigmaLine pipelining manual*



# PPG Protective & Marine Coatings

PPG Protective & Marine Coatings brings unrivalled levels of innovation, experience and expertise in coatings technology, supported through our expanding global supply and distributors' network in over 80 countries.

We have in-depth knowledge of the industry, our customers' day-to-day challenges and the environmental, health and safety standards in the marketplace. By working in close partnership with customers, our technical service representatives are able to offer an unsurpassed level of market knowledge. This enables us to respond quickly with efficient, economic solutions in all environments and industries.

The result – performance-enhancing coating systems that can be applied more easily, resist the elements more effectively, and deliver maximum performance with minimum downtime.

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