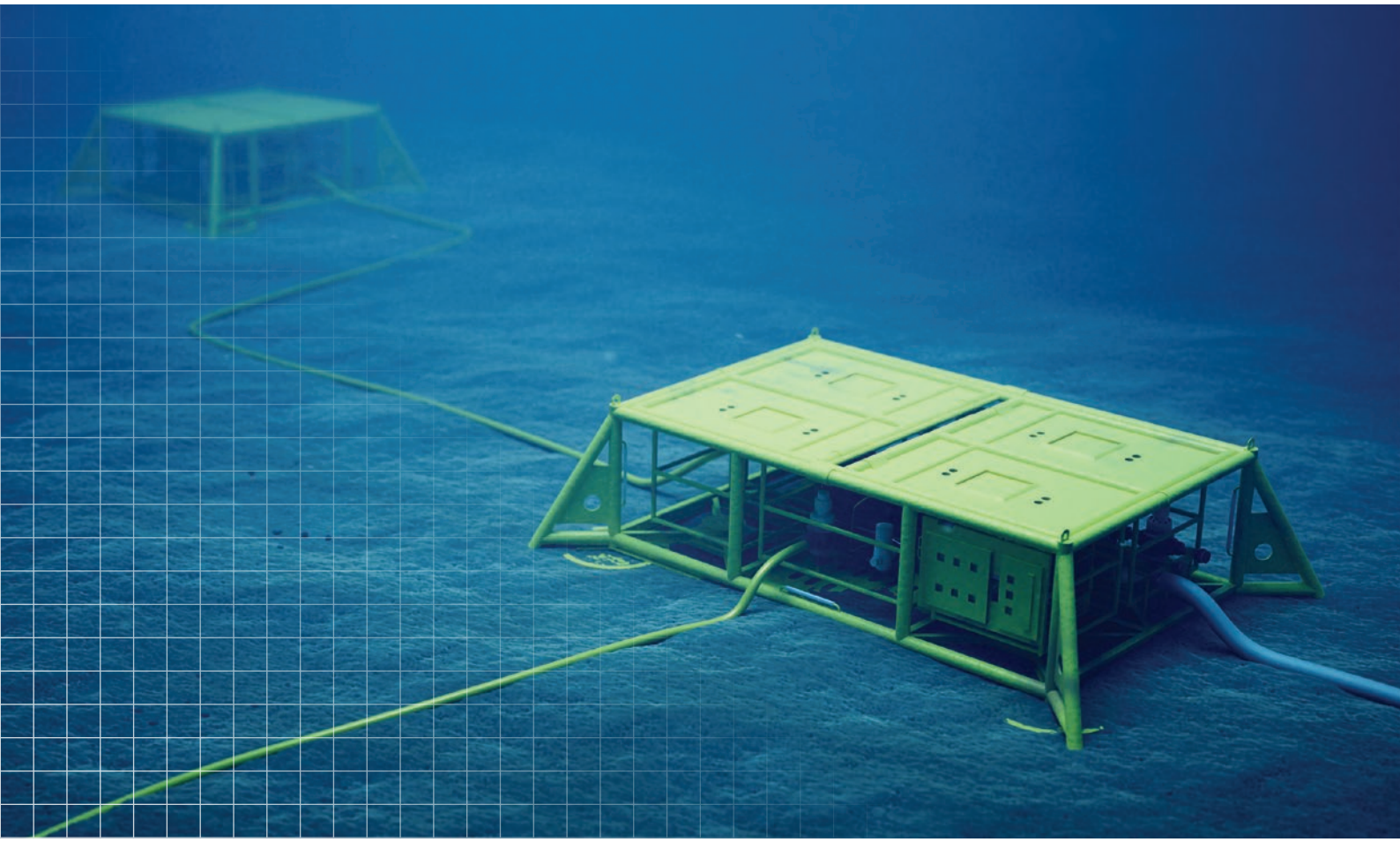
SHERWIN WILLIAMS®

SUBSEA COATING SOLUTIONS

GLOBAL PRODUCTS AND SYSTEMS



FROM SPEC TO PROTECT

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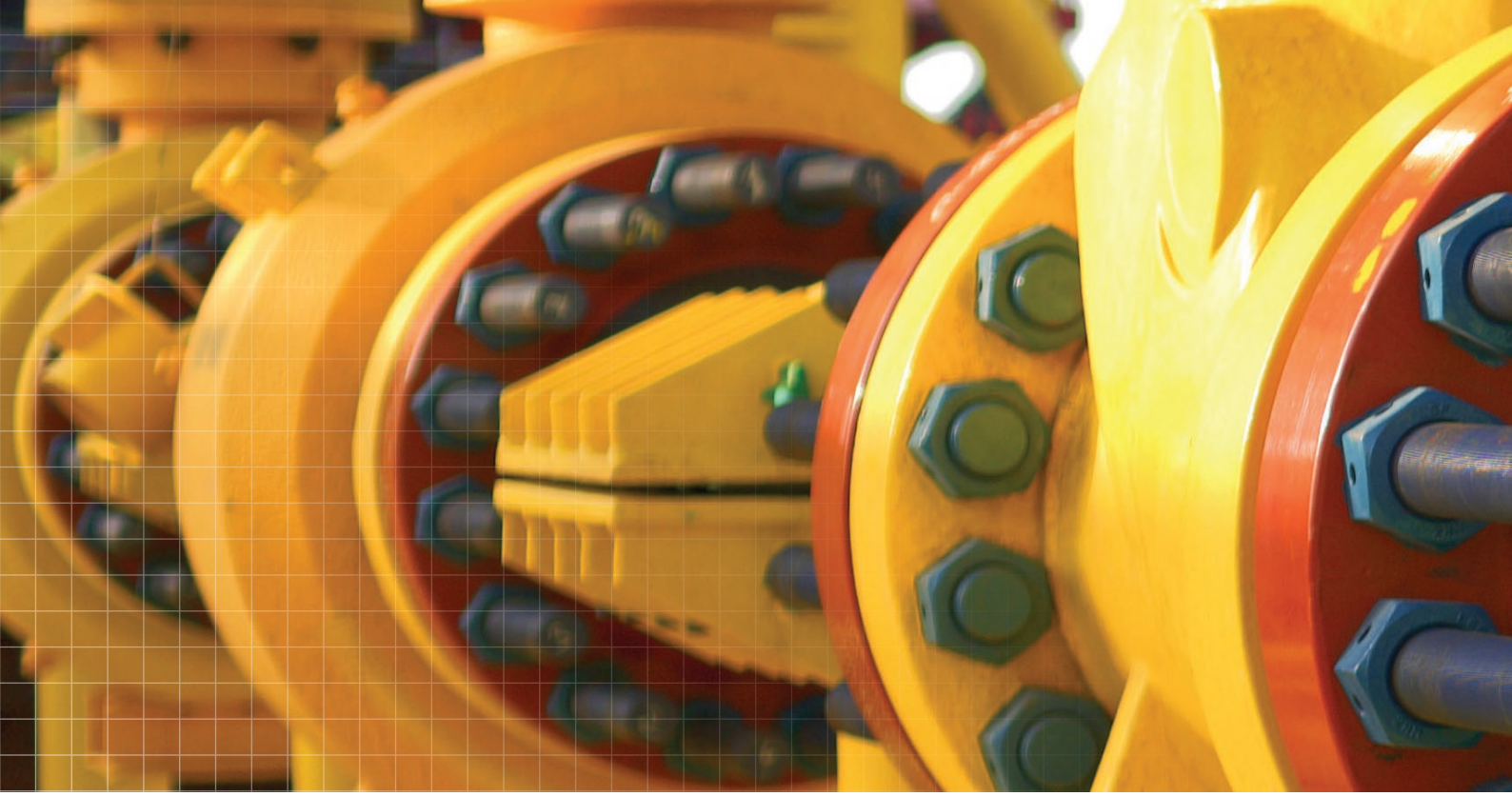

COATINGS FOR EXTREME SUBSEA ENVIRONMENTS

MAXIMUM PROTECTION AGAINST CORROSION AND HIGH-OPERATING TEMPERATURES

Oil and gas production assets placed deep on the seafloor demand a high level of protection and performance. Extreme subsea environments allow no margin for error against aggressive corrosive conditions and elevated operating temperatures.

Protect your assets against catastrophic failures with the Sherwin-Williams line of DURA-SUB™ C liquid and powder coatings. As the only manufacturer making both powder and liquid coatings for specialised subsea applications, Sherwin-Williams is your one-stop shop for high-performing solutions.

TESTED TO PERFORM

Sherwin-Williams DURA-SUB™ C coatings deliver trusted performance through prequalification to global industry standards.

Liquid coatings tested to:

- NORSOK M-501 Revision 6 Systems 7C (high operating temperature over 50°C/122°F, up to 200°C/392°F) and 7B (standard operating temperature / ambient operating temperature 50°C/122°F).
- The coating system also meets testing requirements of NORSOK M-501 revision 6 Coating System7A.

Powder coatings tested to:

- ISO 21809 Series.
- Project specifications (based on requirements for pipe diameter, length, flexibility and other key project specs).

COST SAVINGS WITH TESTED MATERIALS

THE CHALLENGE

When subsea projects are delayed, materials sit dockside. When exposed to aggressive marine environments, these coated assets often experience corrosion which compromises the quality and long-term integrity of the structure.

THE COST

To prevent coated assets from being exposed to the corrosive elements, customers often construct temporary storage for protection, incurring considerable unplanned project costs.

THE SOLUTION

Sherwin-Williams invested in third-party corrosion testing of **DURA-SUB™ C1230** for 7A for splash zone environments. The testing was done to ensure assets coated with this product and exposed to the extreme elements would not be compromised.

POWDER AND LIQUID FROM ONE COATINGS SUPPLIER

Sherwin-Williams has a long history of providing high-quality products for the oil and gas industry and delivering unique value to asset owners and EPC firms.

- Consistent products and unmatched service globally for dependable project execution.
- Reduced touchpoints for owners, operators and producers with streamlined ordering and delivery.
- Ability to evaluate a coating portfolio from one coatings team.
- One point of contact to help ensure proper liquid and powder coating compatibility and project success.

SUBSEA POWDER COATINGS

Description	Key features	Coating system	Approvals	Typical use
PIPECLAD® 2000				
Fusion Bonded Epoxy (FBE)	• Outstanding corrosion protection • Exceptional adhesion • Long-term protection	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Anti-corrosion layer FBE • Under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C5200				
FBE	• Higher glass transition • High flexibility • Reelable	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Anti-corrosion layer FBE • Under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C5400				
FBE	• Higher glass transition • High flexibility • Reelable	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Anti-corrosion layer FBE • Under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C5420				
FBE	• Topcoat of FBE • High glass transition • Enhance barrier and damage-resistant properties	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Protective layer applied over FBE • Topcoat for standalone system or under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C5600				
FBE	• Higher glass transition • High flexibility • Reelable	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Anti-corrosion layer FBE • Under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C5620				
FBE	• Topcoat of FBE • Higher glass transition • Enhance barrier and damage-resistant properties	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Protective layer applied over FBE • Topcoat for standalone system or under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C5800				
FBE	Highest glass transition	Typical thicknesses 10-30 mils FBE, may vary depending on application	ISO 21809 CSA Z245.20	• Anti-corrosion layer FBE • Under insulation, concrete or polyolefin • Subsea tiebacks
DURA-SUB™ C Rough				
Textured FBE	Anti-slip coating for increased grip	Typical thickness 3-5 mils to attain texture	N/A	Anti-slip FBE for subsequent concrete overlay
DURA-SUB™ C5600				
FBE	• Topcoat of FBE • Enhance barrier and damage-resistant properties	Typical thicknesses 10-30 mils FBE, may vary depending on application	CSA Z245.20	• Protective layer applied over FBE • Topcoat for standalone system or Under insulation, concrete or polyolefin • Subsea tiebacks

SUBSEA LIQUID COATINGS

Description	Key features	Coating system	Approvals	Typical use
MACROPOXY® 646				
Polyamide Epoxy	• Epoxy mastic • Fast drying • High-build capabilities • Wide range of colours available including subsea yellow	ISO 8501-1:2007 Sa 2.5 – SSPC-SP10 – NACE 2 50-75 um (2-3 mil) Two 175 um (7 mil) layers – 350 um (14 mil) total system	NORSOK M-501 Rev.6 System 7B 50°C (122°F)	Permanently immersed steel subsea structures <50°C (122°F)
MACROPOXY® M922				
Cycloaliphatic Amine Epoxy	• Epoxy mastic • Reinforced with micronised glass flake • Fast drying • High-build capabilities • Subsea yellow available	ISO 8501-1:2007 Sa 2.5 – SSPC-SP10 – NACE 2 50-75 um (2-3 mil) Two 175 um (7 mil) layers – 350 um (14 mil) total system	NORSOK M-501 Rev.6 System 7B 50°C (122°F). NORSOK M-501 Rev. 6 System 7C 80°C (176°F).	Permanently immersed steel subsea structures <50°C (122°F) Permanently immersed steel. subsea processing equipment, trees, manifolds, sleds, jumpers, piping and valves <80°C (176°F)
MACROPOXY® M922M				
Cycloaliphatic Amine Epoxy	• Epoxy mastic • Reinforced with micronised glass flake • Includes aluminum and anticorrosive pigments • Fast drying • High-build capabilities	ISO 8501-1:2007 Sa 2.5 – SSPC-SP10 – NACE 2 50-75 um (2-3 mil) Two 250 um (10 mil) layers – 500 um (20 mil) total system	NORSOK M-501 Rev.6 System 7B 50°C (122°F)	Permanently immersed steel subsea structures <50°C (122°F)
DURA-SUB™ C1230				
Ultra-High Solids Epoxy Novolac	• Ultra-high solid epoxy • Excellent edge retention • Fast throughput times • Provides outstanding anti-corrosion protection • Passes cyclic aging test when tested in accordance with NORSOK M-501 Rev. 6 System 7A • Subsea yellow available	ISO 8501-1:2007 Sa 2.5 – SSPC-SP10 – NACE 2 – 50-75 um (2-3 mil) Two 175 um (7 mil) layers – 350 um (14 mil) total system OR One 300 um (12 mils) layer	NORSOK M-501 Rev. 6 System 7C temperatures 140°C, 160°C, 180°C & 200°C. NORSOK M-501 Rev. 6 System 7A. Passed 6 months immersion in artificial seawater at 180°C in an autoclave.	Permanently immersed steel subsea processing equipment, trees, manifolds, sleds, jumpers, piping and valves < 200°C (392°F)
DURA-SUB™ C1330				
Solvent Free Novolac Phenolic	• Ceramic and glass flake reinforced • Ultra-high solid epoxy • Solvent free • Excellent edge retention • Rapid throughput times • Subsea yellow available	ISO 8501-1:2007 Sa 2.5 – SSPC-SP10 – NACE 2 – 50-75 um (2-3 mil) Two 175 um (7 mil) layers – 350 um (14 mil) total system	NORSOK M-501 Rev. 6 System 7C 180°C (356°F)	Permanently immersed steel subsea processing equipment, trees, manifolds, sleds, jumpers, piping and valves <180°C (356°F)

ACCELERATED INSTALLATION AND FLEXIBILITY

THE CHALLENGE

Traditionally, pipe pieces are placed on a barge, then welded and coated at sea. After the coating and welding process, the pieces are submerged using an S-lay or J-lay.

THE COST

A barge can be very costly to operate per day, and it can take weeks at sea to install subsea pipe. This process is time consuming, including multiple barge trips to bring more pipe to construct and submerge.

THE SOLUTION

Pipe coated with **DURA-SUB™ C** powder products has the flexibility to be reeled. By using a spool lay, customers can increase the speed of installation because the pipe is pre-welded and coated onshore. In addition, coatings and welds are much safer in a controlled environment when applied on land, rather than at sea.

CONTINUOUS PRODUCT IMPROVEMENT

Progress doesn't come through being idle. Sherwin-Williams has made significant investments in both people and testing resources to strengthen coatings capabilities in the subsea oil and gas market. Our teams are committed to continuous in-house and third-party testing of existing and new products to ensure optimal performance and safety.

INNOVATIVE, NEXT-GENERATION
SOLUTIONS FOR SUBSEA SYSTEMS AND EQUIPMENT

UNMATCHED GLOBAL
TECHNICAL AND SPECIFICATION SERVICES

Unparalleled distribution network

Global industry expertise

Most extensive sales organization coverage

Unmatched technical and specification service

MEET OUR EXPERTS

True innovation starts with people, not products. Meet our global technology experts who lead the industry and drive new product development.

Neil Wilds
Global Product Director – Corrosion Under Insulation (CUI) and Testing

With 35 years of technical coatings experience, Neil is focused on developing strategies for long-term asset protection from the effects of CUI in the oil and gas industry. He also directs the development of specifications and testing programs with asset owners and operators. Neil is a member of several coatings associations and is actively involved in developing coatings corrosion and CUI test standards with NACE International.

Dr. Jeffrey Rogozinski
Global Product Director – Fusion-Bonded Epoxy/Pipe

With more than 30 years of experience in coatings and academia, Jeffrey is responsible for developing protective coatings, powder coatings, resins and additives for the oil and gas and pipeline markets. He is a member of several coatings associations and a consultant for global specification writing for CSA Group, the International Organization for Standardization (ISO), ASTM International, NACE International and others.

Travis Crotwell
Business Development Manager – Upstream Oil & Gas

With more than 17 years of experience in the coatings industry, Travis is responsible for market development in the upstream segment. This includes serving as a corrosion specialist and providing engineering support for owners, operators and EPC firms. Travis is a NACE CIP Certified Coating Inspector, SSPC CCI Certified Coatings Technician and a board member for the SSPC Gulf Coast Chapter.

SUBSEA COATING SOLUTIONS

GLOBAL PRODUCTS AND SYSTEMS

THE SHERWIN-WILLIAMS DIFFERENCE

Sherwin-Williams Protective & Marine delivers world-class industry subject matter expertise, unparalleled technical and specification service, and unmatched regional commercial team support to our customers around the globe. Our broad portfolio of high-performance coatings and systems that excel at combating corrosion helps customers achieve smarter, time-tested asset protection. We serve a wide array of markets across our rapidly growing international distribution footprint, including oil and gas, water and wastewater, bridge and highway, steel fabrication, flooring, food and beverage, rail and power, marine and passive fire protection.

SHERWIN-WILLIAMS®

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