SHERWIN WILLIAMS®

NORSOK M-501

SYSTEMS GUIDE 2020 EDITION

FROM SPEC TO PROTECT

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NORSOK M-501
SYSTEMS GUIDE 2020 EDITION*

Whatever the challenge, Sherwin-Williams is committed to providing tailor made specifications to fulfil your project requirements. With our global supply chain and skilled technical service network, we ensure that your asset will remain protected wherever its location.

Our global footprint allows us to supply our tailored lining solutions anywhere in the world, helping you to protect your investment from the worlds harshest environments. With 12 factories, nine research and development departments in Europe and operations in over 120 countries. Our comprehensive product offering and extensive range of approvals enable us to provide you with the complete coatings solutions for passive fire protection and for all types of applications and industries to meet your needs.

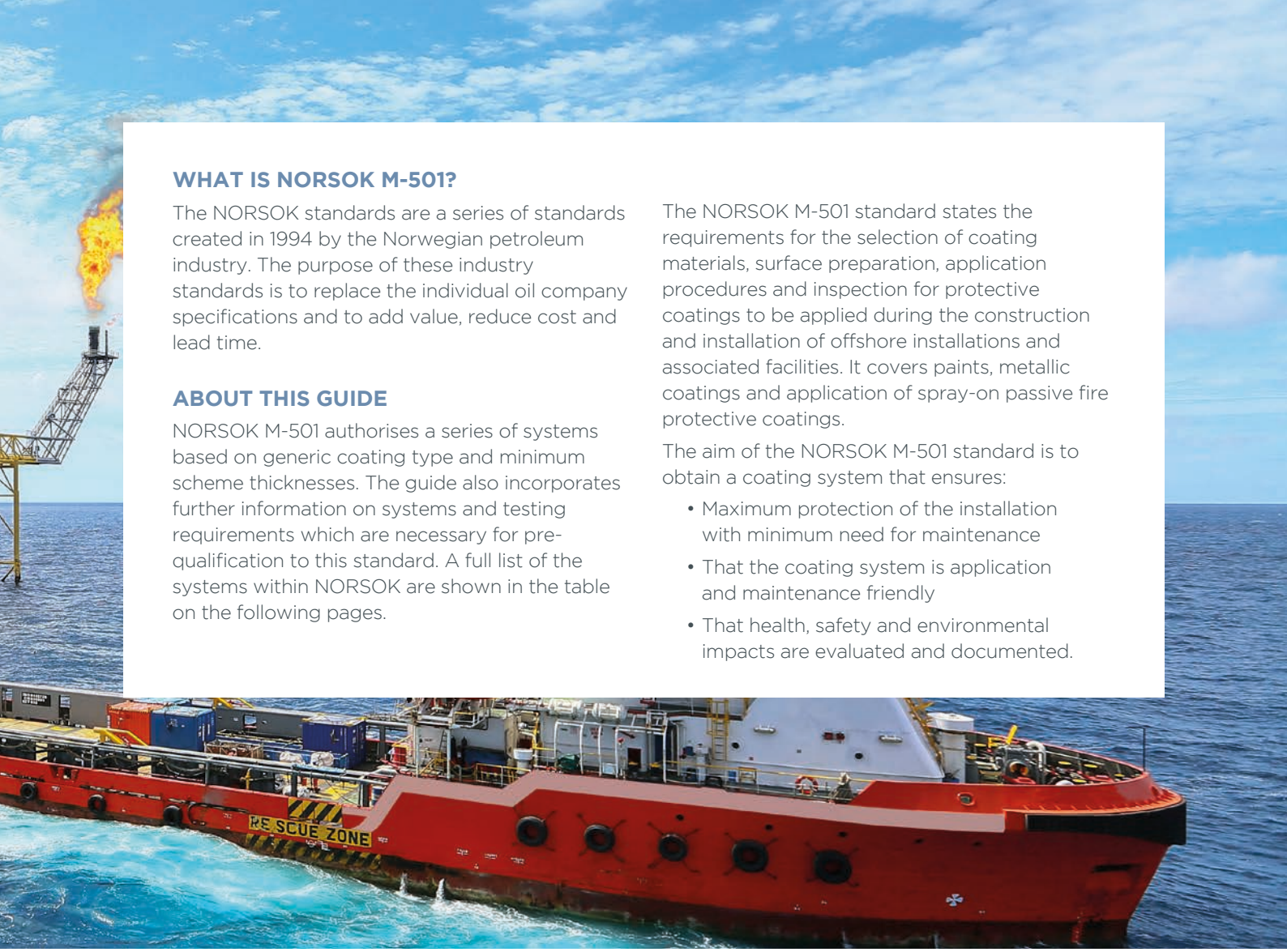
We provide expertise in our selected market segments enabling us to continually improve our product offering to meet the ever changing needs of our customers.

We are technology leaders in the following categories:

- High performance protective coatings.
- Tank linings
- High temperature and under insulation coatings
- Passive fire and cryogenic spill protection (FIRETEX® range)
- Pipeline coatings
- Resin flooring

For over 150 years, Sherwin-Williams has been committed to developing and delivering innovative protective and marine coating solutions, unparalleled service and expert specification support to its customers. Contact your local representative to discuss any individual needs for your project.

* This system guide is not exhaustive and focus on products readily available in Europe, Middle East, Africa and India region (EMEAI). For more information about additional approved systems contact Sherwin-Williams technical support services or visit our website.



WHAT IS NORSOK M-501?

The NORSOK standards are a series of standards created in 1994 by the Norwegian petroleum industry. The purpose of these industry standards is to replace the individual oil company specifications and to add value, reduce cost and lead time.

ABOUT THIS GUIDE

NORSOK M-501 authorises a series of systems based on generic coating type and minimum scheme thicknesses. The guide also incorporates further information on systems and testing requirements which are necessary for pre-qualification to this standard. A full list of the systems within NORSOK are shown in the table on the following pages.

The NORSOK M-501 standard states the requirements for the selection of coating materials, surface preparation, application procedures and inspection for protective coatings to be applied during the construction and installation of offshore installations and associated facilities. It covers paints, metallic coatings and application of spray-on passive fire protective coatings.

The aim of the NORSOK M-501 standard is to obtain a coating system that ensures:

- Maximum protection of the installation with minimum need for maintenance
- That the coating system is application and maintenance friendly
- That health, safety and environmental impacts are evaluated and documented.

NORSOK M-501

SYSTEMS AND CONTENTS

NORSOK M-501

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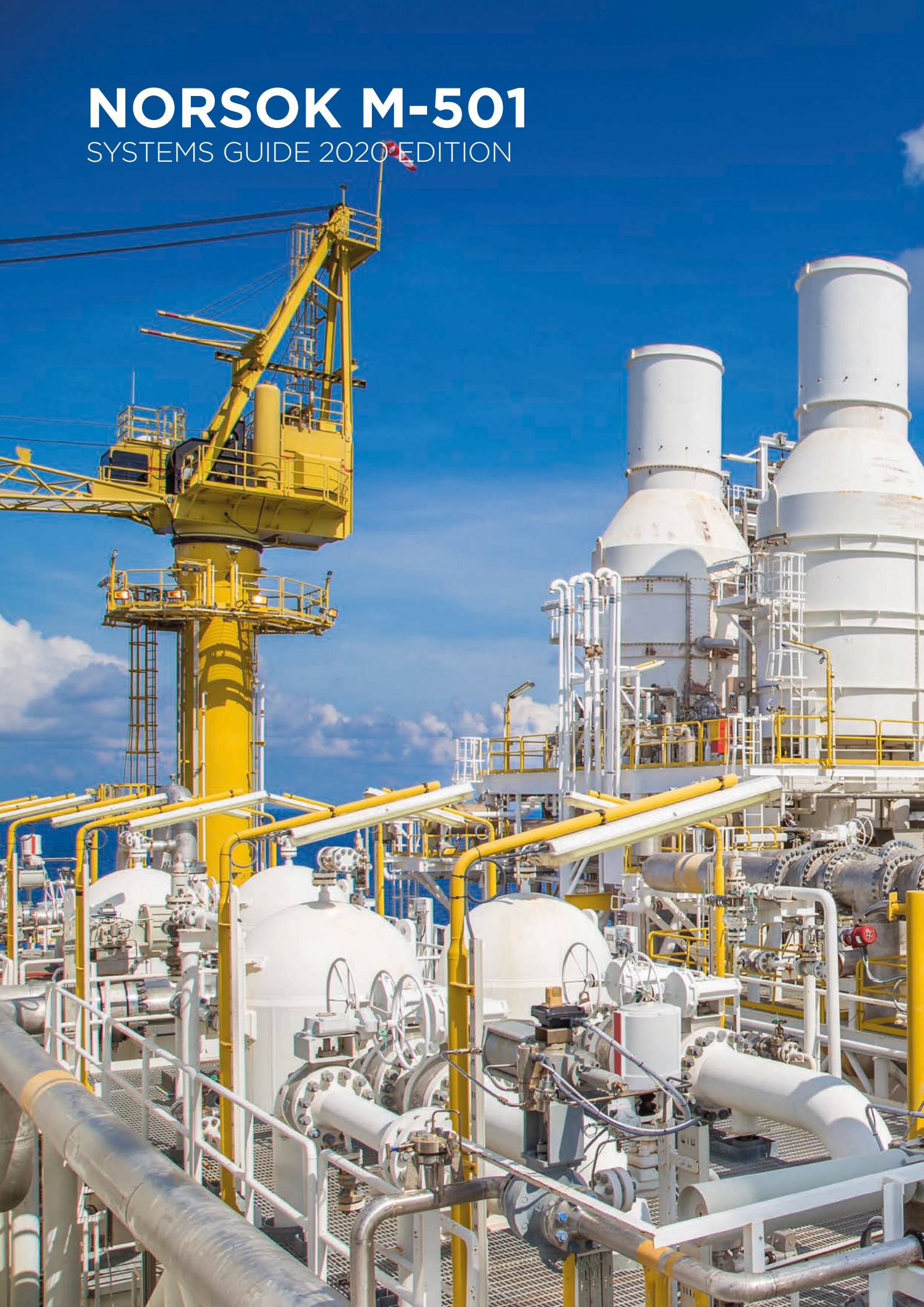


SYSTEM 1:
STRUCTURAL STEEL AND EXTERIORS OF EQUIPMENT, VESSELS, PIPING AND VALVES (UN-INSULATED)

Zinc rich epoxy primers with polyurethane top coats

Product	DFT (um)
Zinc Clad IV Series	60
Macropoxy 267	160
Acrolon 7300	60
Total	**280**

Zinc Clad IV Series	60
Macropoxy 646	160
Acrolon 7300	60
Total	**280**

Zinc rich epoxy primers with isocyanate-free epoxy acrylic top coats

Product	DFT (um)
Zinc Clad IV Series	60
Macropoxy 267	160
Acrolon 1850	60
Total	**280**

Zinc Clad IV Series	60
Macropoxy 646	160
Acrolon 1850	60
Total	**280**

Zinc rich epoxy primers with isocyanate-free polysiloxane top coats

Product	DFT (um)
Zinc Clad IV Series	60
Macropoxy 267	120
Sher-Loxane 800	100
Total	**280**

Zinc Clad IV	60
Macropoxy 646	120
Sher-Loxane 800	100
Total	**280**

SYSTEM 1:
STRUCTURAL STEEL AND EXTERIORS OF EQUIPMENT, VESSELS, PIPING AND VALVES (UN-INSULATED)

Inorganic zinc rich primers with isocyanate-free epoxy acrylic top coats

Product	DFT (um)
Zinc Clad II EU Series	60
Macropoxy 267	160
Acrolon 1850	60
Total	**280**

Zinc Clad II EU Series	60
Macropoxy 646	160
Acrolon 1850	60
Total	**280**

Inorganic zinc rich primers with isocyanate-free polysiloxane top coats

Product	DFT (um)
Zinc Clad II EU Series	60
Macropoxy 267	120
Sher-Loxane 800	100
Total	**280**

Zinc Clad II EU Series	60
Macropoxy 646	120
Sher-Loxane 800	100
Total	**280**

SYSTEM 2:
THERMALLY SPRAYED ALUMINIUM AND ZINC

Thermally sprayed aluminium or aluminium alloy at 200 um

Product	DFT (um)
TSA	as defined
Macropoxy L574	sealing (1)
Total	**N/A**

TSA	as defined
Heat-Flex M505 (aluminium)	sealing (1) (2)
Total	**N/A**

Thermally sprayed zinc or zinc alloy at 100 um

Product	DFT (um)
TSZ	as defined
	tie coat (3)
Macropoxy 267	160
Acrolon 7300	60
Total	**220**

TSZ	as defined
	tie coat (3)
Macropoxy 646	160
Acrolon 7300	60
Total	**220**

(1) The sealer shall fill the metal pores. It shall be applied until absorption is complete. There should not be a measurable overlay of sealer on the metallic coating after application.
(2) Maximum operating temperature 600°C.
(3) Contact Sherwin-Williams technical support for guidance on available tie coats.

SYSTEM 3A:
POTABLE WATER TANKS

Product	DFT (um)
Dura-Plate UHS	300
Dura-Plate UHS	300
Total	**600**

SYSTEM 3B:
BALLAST WATER TANKS

Product	DFT (um)
Dura-Plate 301	160
Dura-Plate 301	160
Total	**320**

Fast-Clad ER	500
Total	**500**

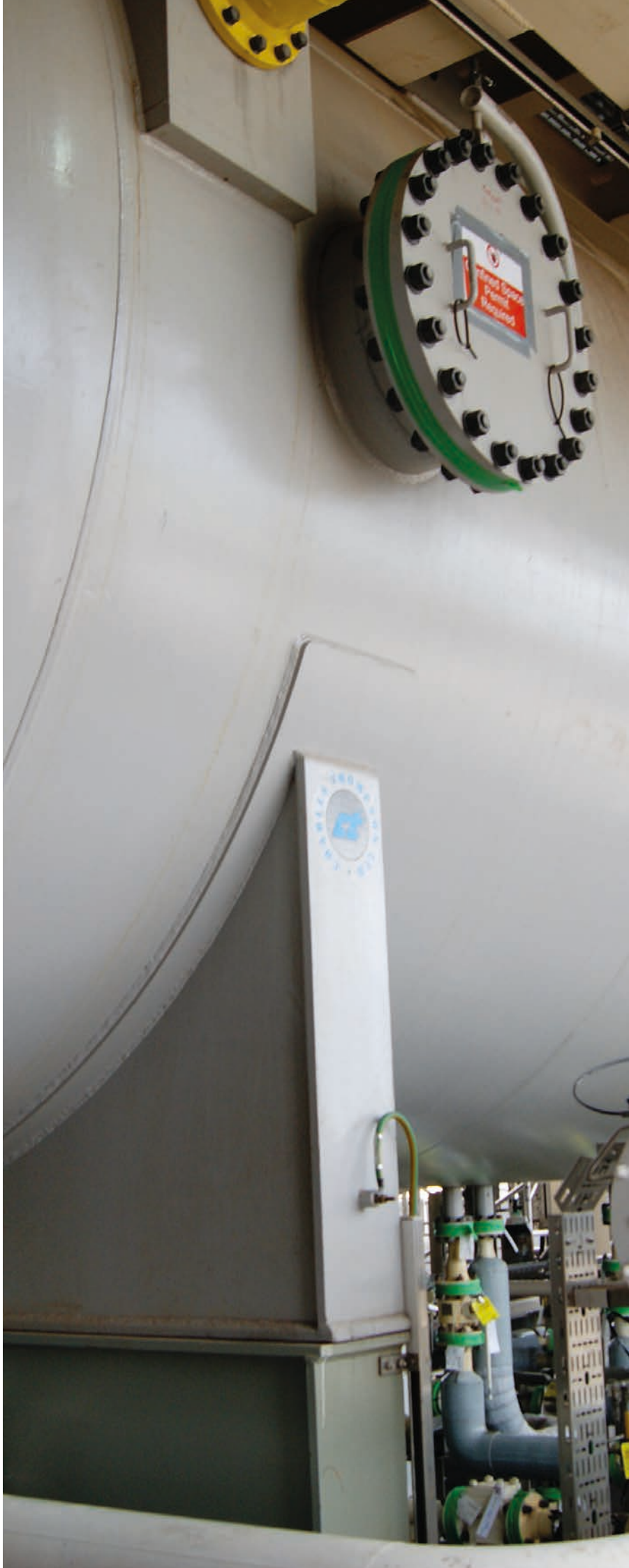
SYSTEM 3C:
CRUDE, DIESEL AND CONDENSATE TANKS

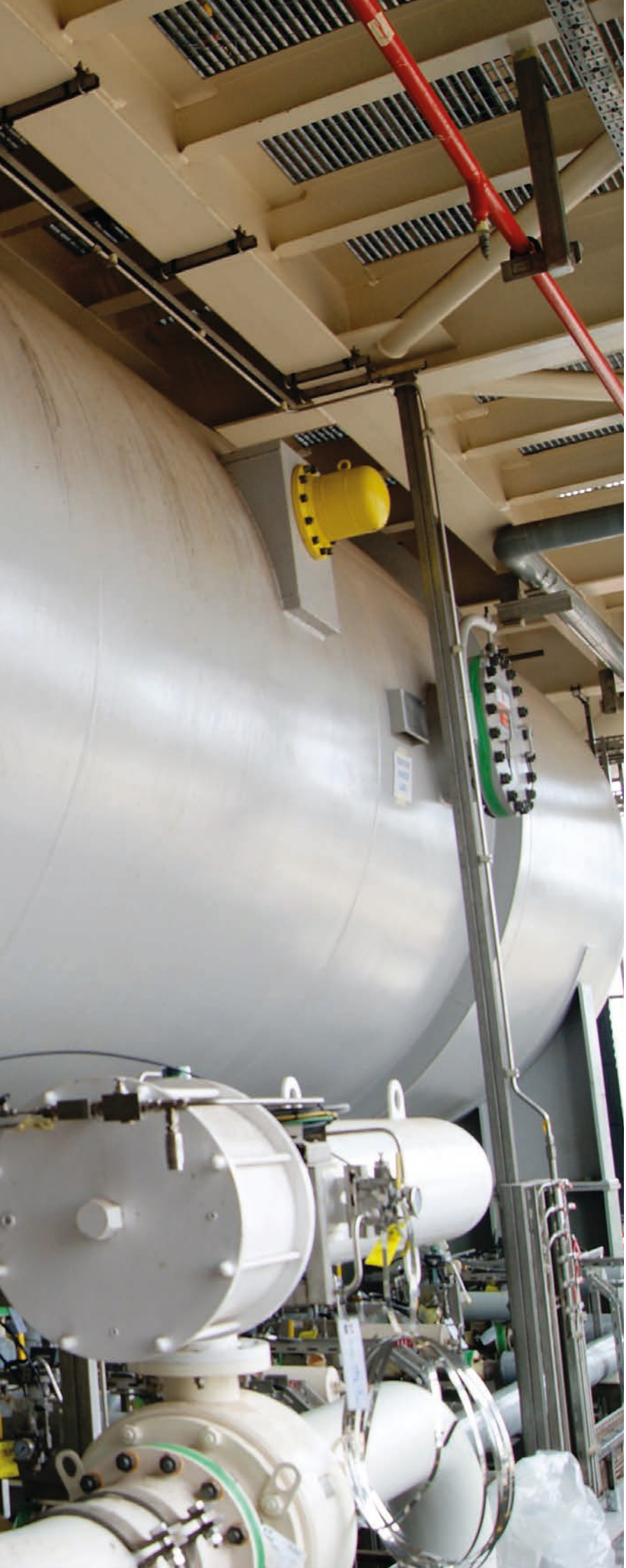
Product	DFT (um)
Dura-Plate UHS	150
Dura-Plate UHS	150
Total	**300**

Fast-Clad ER	500
Total	**500**

Dura-Plate 301	150
Dura-Plate 301	150
Total	**300**

Macropoxy M922	200
Macropoxy M922	200
Total	**400**





SYSTEM 3D:
PROCESS VESSELS <0.3MPA <75°C

Product	DFT (um)
Epo-Phen FF	175
Epo-Phen FF	175
Total	**350**

SYSTEM 3E:
PROCESS VESSELS <7.0 MPA <80°C

Product	DFT (um)
Epo-Phen FF	175
Epo-Phen FF	175
Total	**350**

SYSTEM 3F:
PROCESS VESSELS <3.0 MPA <130°C

Product	DFT (um)
Nova-Plate UHS	450
Total	**450**

Epo-Phen FF	175
Epo-Phen FF	175
Total	**350**

Nova-Plate 325	450
Total	**450**

SYSTEM 3G:
VESSELS FOR METHANOL, MONOETHYLENE GLYCOL ETC...

Product	DFT (um)
Zinc Clad II Series	75
Total	**75**

Nova-Plate UHS	450
Total	**450**

SYSTEM 4:
WALKWAYS, ESCAPE ROUTES AND LAYDOWN AREAS

Product	DFT (um)
Macropoxy L425	125
Epidek M153 (1)	3000
Total	**3125**

Alternative: other deck areas

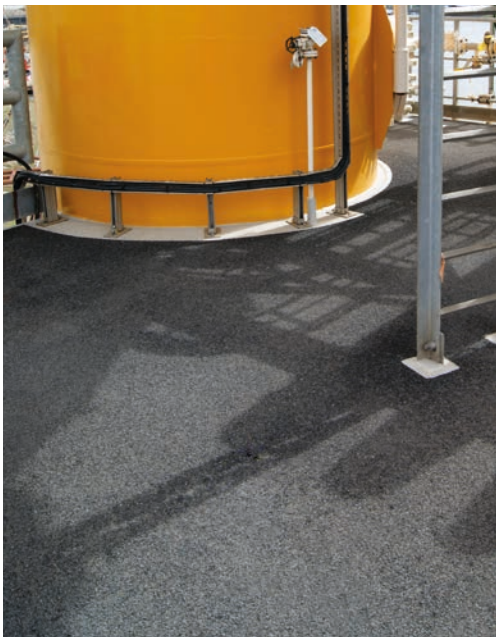
Independently tested, ageing test approved by ISO 20340/ISO 12944-9

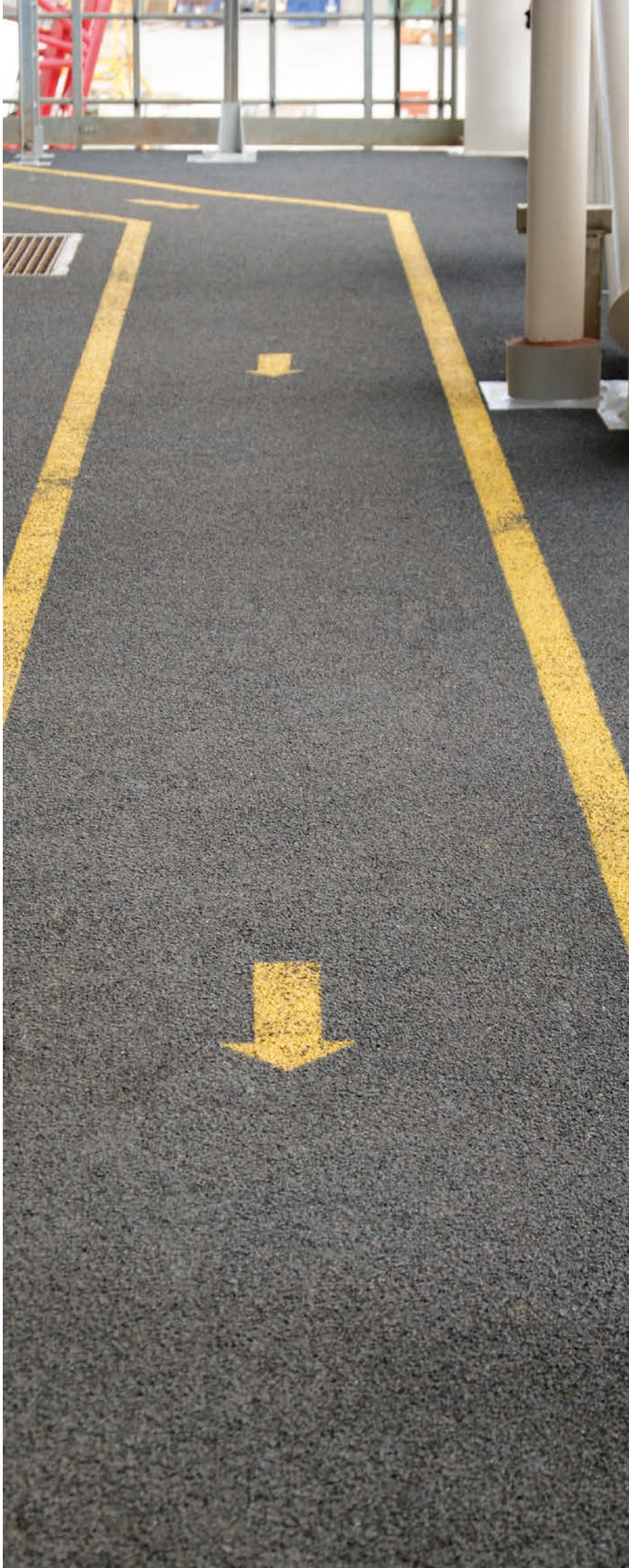
Product	DFT (um)
Macropoxy L425	125
Epidek M339	400
Epidek M339	400
Total	**925**

Zinc Clad IV	60
Macropoxy 646	175
Macropoxy 646	175
Acrolon 7300	60
Total	**470**

Zinc Clad IV	60
Macropoxy M922M	400
Macropoxy M922	400
Acrolon 7300	60
Total	**920**

(1) Tested over Macropoxy L425 primer. Please contact Sherwin-Williams technical support for guidance on other available primers.





SYSTEM 5A:
EPOXY BASED PASSIVE
FIRE PROTECTION

Priming systems

Product	DFT (um)
Zinc Clad IV Series	60
Macropoxy L574	25
FIRETEX M90/02	as required
Top coat approved by PFP manufacturer	
Total (priming)	**85**

Macropoxy L574	25
FIRETEX M90/02	as required
Top coat approved by PFP manufacturer	
Total (priming)	**25**

SYSTEM 5B:
CEMENTITIOUS PASSIVE FIRE PROTECTION

Primers and top coats

Product	DFT (um)
Zinc Clad IV Series	60
Macropoxy 646	200
Cementitious PFP	as required
Top coat approved by PFP manufacturer	
Total (priming)	**260**

Zinc Clad IV Series	60
Macropoxy 267	200
Cementitious PFP	as required
Top coat approved by PFP manufacturer	
Total (priming)	**260**

SYSTEM 6A:
STAINLESS STEEL AND ALUMINIUM

Product	DFT (um)
Macropoxy 646 (mist)	50
Macropoxy 646	100
Approved top coat	75
Total	**225**

Macropoxy L425	50
Macropoxy 646	100
Approved top coat	75
Total	**225**

Macropoxy L425	50
Macropoxy 267	100
Approved top coat	75
Total	**225**

SYSTEM 6B:
HOT DIPPED GALVANIZED STEEL

Product	DFT (um)
Macropoxy 646 (mist)	50
Macropoxy 646	100
Approved top coat	75
Total	**225**

Macropoxy K267 (mist)	50
Macropoxy 646	100
Approved top coat	75
Total	**225**

Macropoxy K267 (mist)	50
Macropoxy 267	100
Approved top coat	75
Total	**225**

SYSTEM 6C:
INSULATED STAINLESS STEEL T<150°C

Product	DFT (um)
Epo-Phen FF	125
Epo-Phen FF	125
Total	**250**

SYSTEM 7A:
SPLASH ZONE

Epoxy

Product	DFT (um)
Fast Clad 7240	125
Macropoxy C123	475
Total	**500**

Dura-Plate 6000*	300
Dura-Plate 6000*	300
Total	**600**

*US availability only.

Vinyl ester

Product	DFT (um)
Magnalux 41V2	500
Magnalux 41V2	500
Total	**1000**

Polyester

Product	DFT (um)
Magnalux 42PE	500
Magnalux 42PE	500
Total	**1000**

Magnalux 42SF	500
Magnalux 42SF	500
Total	**1000**

SYSTEM 7B:
PERMANENTLY IMMERSED,
STEEL TEMPERATURE <50°C

Product	DFT (um)
Macropoxy 646	175
Macropoxy 646	175
Total	**350**

Macropoxy M922	175
Macropoxy M922	175
Total	**350**

Macropoxy M922M	250
Macropoxy M922M	250
Total	**500**

Macropoxy L674	50
Macropoxy M922	350
Total	**400**

SYSTEM 7C:
PERMANENTLY IMMERSED,
STEEL TEMPERATURE >50°C

Approved for 180°C

Product	DFT (um)
Nova-Plate 325	175
Nova-Plate 325	175
Total	**350**

Approved for 140°C

Product	DFT (um)
Nova-Plate UHS	175
Nova-Plate UHS	175
Total	**350**

Approved for 99°C

Product	DFT (um)
Epo-Phen FF	175
Epo-Phen FF	175
Total	**350**

Approved for 80°C

Product	DFT (um)
Macropoxy M922	175
Macropoxy M922	175
Total	**350**

Approved for 90°C

Product	DFT (um)
Macropoxy L674	50
Macropoxy M922*	350
Total	**400**

*M922 can be applied in two coats.

SYSTEM 8:
INTERNAL FULLY DRY VENTILATED AREAS

Option A – single coat of epoxy

Product	DFT (um)
Macropoxy 646	150
Total	**150**

Macropoxy 400	150
Total	**150**

Macropoxy C425V2	150
Total	**150**

Option B – one coat zinc rich epoxy + epoxy tie coat

Product	DFT (um)
Zinc Clad IV Series	60
Macropoxy L574	25
Total	**85**

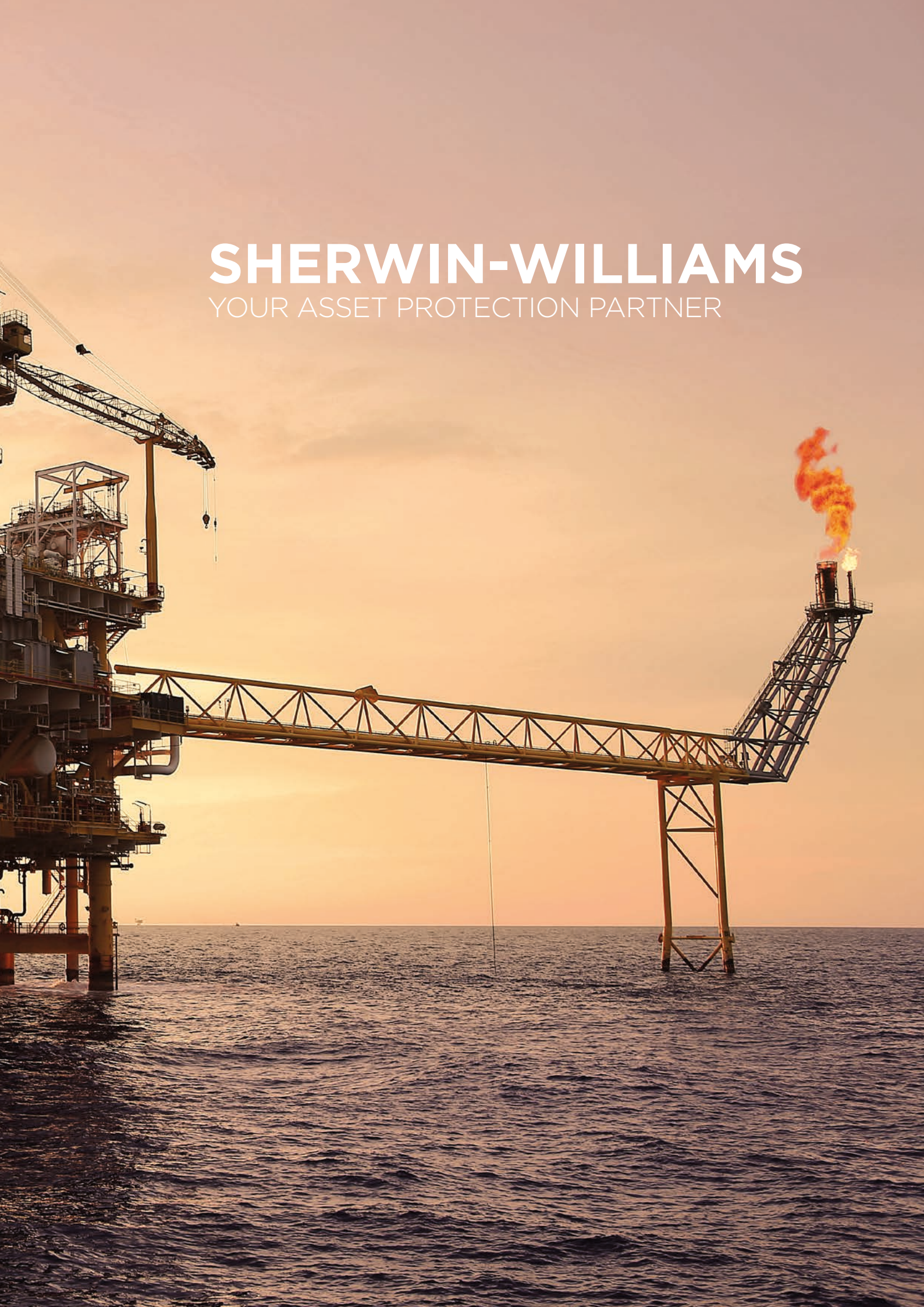
SYSTEM 9:
BULK SUPPLIED CARBON STEEL VALVES

Product	DFT (um)
Epo-Phen FF	150
Epo-Phen FF	150
Total	**300**

Alternative: non-phenolic, ISO 20340 approved

Product	DFT (um)
Heat-Flex Hi-Temp 1200	125
Heat-Flex Hi-Temp 1200	125
Total	**250**

Insulated and un-insulated carbon steel and stainless steel.
Service range: cryogenic to 650ºC.
Passed ISO 20340 ageing test after curing at ambient temperature.



SHERWIN-WILLIAMS

YOUR ASSET PROTECTION PARTNER

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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.

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