

# **NORSOK M-501 Revision 7**

SYSTEMS GUIDE 2025 EDITION







# NORSOK M-501 Revision 7

## SYSTEMS GUIDE 2025 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
- Subsea coatings

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.





### 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. Recently NORSOK M-501 standard has been increasingly adopted by the offshore wind industry as well.

### 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, according to the latest edition (revision 7) of this standard (NORSOK M-501:2022).

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.

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<b>System 1A:</b>	Offshore and coastal environment, non-insulated, -50 °C to +80 °C (Carbon steel, with inorganic zinc rich primer)	Structures, structural components, frames, base plates, enclosures, permanent lifting beams and lugs, bridges, crane boom, A-frames, lifeboat stations and rescue areas, equipment items, piping and valves.	CX	Page 6
<b>System 1B:</b>	Offshore and coastal environment, non-insulated, -50 °C to +80 °C (Carbon steel, with organic zinc rich primer)	Structures, structural components, equipment items, piping and valves - for use when accepted by end user. Low voltage motors.		
<b>System 1D:</b>	Under insulation, -50 °C to +200 °C (Carbon steel)	Structures, structural components, equipment items, piping and valves.		
<b>System 2A:</b>	Offshore and coastal environment, insulated and non-insulated, + 80 °C to +595 °C (Carbon steel with thermally sprayed aluminium or aluminium alloy at 200µm)	Exhaust stack, flare stack, pressure vessels, equipment, piping and valves, pumps.	CX, CX+Im4, Im4, Im3	Page 8
<b>System 2B:</b>	Offshore and coastal environment, non-insulated, -50 °C to +80 °C (Carbon steel with thermally sprayed zinc or zinc alloy at 100µm)	Structures, structural components, equipment items, piping and valves.	CX	
<b>System 2C:</b>	Offshore and coastal environment, insulated and non-insulated, + 80 °C to +595 °C (Stainless steel)	Exhaust stack, flare stack, pressure vessels, equipment, piping and valves, pumps.	CX, CX+Im4, Im4, Im3	
<b>System 3A</b>	Internal lining of tanks for potable water, -20 °C to +40 °C (Carbon steel)	Internal surface of carbon steel tanks for potable water.	n/a	Page 9
<b>System 3B</b>	Internal lining combined with CP for tanks containing corrosive waters, -20 °C to +50 °C (Carbon steel)	Internal surface of carbon steel tanks for potable water seawater, service water, slop, open drain etc.		
<b>System 3C</b>	Internal lining, for tanks containing crude/diesel and condensate, -20 °C to +50 °C (Carbon steel)	Internal surface of carbon steel tanks for stabilized crude, diesel and condensate.		
<b>System 3D</b>	Internal lining of pressure vessels containing hydrocarbons, produced water, aviation fuel, -20°C to +75 °C (Carbon steel)	Internal surface of process vessels containing hydrocarbon liquids and vapour, produced water, aviation fuel, with maximum operating pressure of 0.3 MPa		
<b>System 3E</b>	Internal lining of pressure vessels containing hydrocarbons, produced water, -20 °C to +80 °C (Carbon steel)	Internal surface of process vessels containing hydrocarbon liquids and vapour, produced water, with maximum operating pressure 7.0 Mpa		
<b>System 3F</b>	Internal lining of pressure vessels containing hydrocarbons, produced water, -20 °C to +130 °C (Carbon steel)	Internal surface of process vessels containing hydrocarbon liquids and vapour, produced water, with maximum operating pressure 3.0 Mpa		
<b>System 3G</b>	Internal lining of tanks containing methanol, ethanol, mono ethyl glycol and similar, -20 °C to +40 °C (Carbon steel)	Internal surface of storage vessels containing methanol, ethanol, mono ethyl glycol and similar		

<b>System 4A</b>	Offshore and coastal environment, non-insulated, -20 °C to +80 °C (Carbon steel)	Heavy duty walkways, escape routes, decks and floors, helideck.	CX	Page 10
<b>System 4B</b>	Offshore and coastal environment, non-insulated, -20 °C to +80 °C (Carbon steel)	Other decks and floors when and where agreed with end user (systems independently tested, ageing test approved by ISO 20340/ ISO 12944-9)		
<b>System 6A</b>	Offshore and coastal environment, non-insulated, -50 °C to +80 °C (Stainless steel when coating is specified)	Stainless steel structures, structural components, equipment items, piping and valves.	CX	Page 11
<b>System 6B</b>	Offshore and coastal environment, non-insulated, -50 °C to +80 °C (HDG, when coating is specified)	Hot dip galvanized structures, structural components, equipment items, piping and valves		
<b>System 6C</b>	Offshore and coastal environment, insulated, -50 °C to +200 °C (Stainless steel)	Stainless steel pressure vessels, piping and valves.		
<b>System 6D</b>	Offshore and coastal environment, non-insulated, -50 °C to +80 °C (Aluminium when coating is specified)	Aluminium structures, structural components, equipment items.		
<b>System 7A</b>	Splash zone, tidal zone and combined with CP, up to +50 °C (Carbon steel)	Structures, structural components, equipment items, piping and valves.	CX, CX+Im4	Page 12 & 13
<b>System 7B</b>	Seawater combined with CP, up to +50 °C (Carbon steel)	Structures, structural components, equipment items, piping and valves.	Im4	
<b>System 7C</b>	Seawater combined with CP, up to +150 °C (Carbon steel)	Permanently immersed structures, structural components, equipment items, piping and valves.	Im4	
<b>System 7D</b>	Splash zone, tidal zone and combined with CP, up to +50 °C (Stainless steel and non-ferrous alloys when coating is specified)	Structures, structural components, equipment items, piping and valves.	CX, CX+Im4	
<b>System 7E</b>	Seawater combined with CP, up to +50 °C (Stainless steel and non-ferrous alloys when coating is specified)	Permanently immersed structures, structural components, equipment items, piping and valves.	Im4	
<b>System 7F</b>	Seawater combined with CP, up to +150 °C (Stainless steel and non-ferrous alloys when coating is specified)	Permanently immersed structures, structural components, equipment items, piping and valves.	Im4	
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<b>System 9</b>	Offshore and coastal environment, insulated, below -50 °C (Stainless steel, Non-ferrous metals)	Equipment items, piping and valves in cryogenic service	CX	Page 15



# SYSTEM 1



**System 1A:**  
Offshore and coastal environment,  
non-insulated, -50 °C to +80 °C  
(Carbon steel, with inorganic zinc  
rich primer)

Isocyanate-free epoxy acrylic  
top coats

Product	DFT (µm)
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

Isocyanate-free polysiloxane  
top coats

Product	DFT (µm)
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 1B:**  
Offshore and coastal environment,  
non-insulated, -50 °C to +80 °C  
(Carbon steel, with organic zinc  
rich primer)

Polyurethane top coats

Product	DFT (µm)
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

Isocyanate-free epoxy acrylic  
top coats

Product	DFT (µm)
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

Isocyanate-free polysiloxane  
top coats

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

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

**System 1D:**  
Under insulation, -50 °C to +200 °C  
(Carbon steel)

Product	DFT (µm)
Heat Flex 750	125
Heat Flex 750	125
Total	250

Heat Flex 650	100
Heat Flex 650	100
Total	200

Heat Flex ACE	250
Heat Flex ACE	250
Total	500



# SYSTEM 2

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**System 2A:**  
Offshore and coastal environment,  
insulated and non-insulated,  
+ 80 °C to +595 °C (Carbon steel  
with thermally sprayed aluminium  
or aluminium alloy at 200µm)

Product	DFT (µm)
TSA	as defined
Macropoxy L574	sealing <sup>(1)(2)</sup>
<b>Total</b>	<b>N/A</b>

Product	DFT (µm)
TSA	as defined
Heat-Flex M505 (aluminium)	sealing <sup>(2)(3)</sup>
<b>Total</b>	<b>N/A</b>

**System 2B:**  
Offshore and coastal environment,  
non-insulated, -50 °C to +80 °C  
(Carbon steel with thermally  
sprayed zinc or zinc alloy at  
100µm)

Product	DFT (µm)
TSZ	as defined
	tie coat <sup>(4)</sup>
Macropoxy 267	160
Acrolon 7300	60
<b>Total</b>	<b>220</b>

Product	DFT (µm)
TSZ	as defined
	tie coat <sup>(4)</sup>
Macropoxy 646	160
Acrolon 7300	60
<b>Total</b>	<b>220</b>

**System 2C:**  
Offshore and coastal environment,  
insulated and non-insulated,  
+ 80 °C to +595 °C (Stainless steel)

Product	DFT (µm)
Stainless steel	as defined
Macropoxy L574	sealing <sup>(2)</sup>
<b>Total</b>	<b>N/A</b>

Product	DFT (µm)
Stainless steel	as defined
Heat-Flex M505 (stainless steel)	sealing <sup>(2)(3)</sup>
<b>Total</b>	<b>N/A</b>

(1) Maximum temperature 100°C.

(2) 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.

(3) Maximum operating temperature 600°C.

(4) Contact Sherwin-Williams technical support for guidance on available tie coats.

# SYSTEM 3

**System 3A:**  
Internal lining of tanks for potable water, -20 °C to +40 °C (Carbon steel)

Product	DFT (µm)
Dura-Plate UHS	300
Dura-Plate UHS	300
<b>Total</b>	<b>600</b>

**System 3B:**  
Internal lining combined with CP for tanks containing corrosive waters, -20 °C to +50 °C (Carbon steel)

Product	DFT (µm)
Dura-Plate 301W	160
Dura-Plate 301W	160
<b>Total</b>	<b>320</b>
Fast-Clad ER	500
<b>Total</b>	<b>500</b>

**System 3C:**  
Internal lining, for tanks containing crude/diesel and condensate, -20 °C to +50 °C (Carbon steel)

Product	DFT (µm)
Dura-Plate UHS	150
Dura-Plate UHS	150
<b>Total</b>	<b>300</b>

Fast-Clad ER	500
<b>Total</b>	<b>500</b>

Dura-Plate 301W	150
Dura-Plate 301W	150
<b>Total</b>	<b>300</b>

Macropoxy M922	200
Macropoxy M922	200
<b>Total</b>	<b>400</b>

**System 3D:**  
Internal lining of pressure vessels containing hydrocarbons, produced water, aviation fuel, -20°C to +75 °C (Carbon steel)

Product	DFT (µm)
Epo-Phen FF	175
Epo-Phen FF	175
<b>Total</b>	<b>350</b>

**System 3E:**  
Internal lining of pressure vessels containing hydrocarbons, produced water, -20 °C to +80 °C (Carbon steel)

Product	DFT (µm)
Novaplate UHS	450
<b>Total</b>	<b>450</b>

**System 3F:**  
Internal lining of pressure vessels containing hydrocarbons, produced water, -20 °C to +130 °C (Carbon steel)

Product	DFT (µm)
Nova-Plate UHS	450
<b>Total</b>	<b>450</b>

Nova-Plate 325	450
<b>Total</b>	<b>450</b>

**System 3G:**  
Internal lining of tanks containing methanol, ethanol, mono ethyl glycol and similar, -20 °C to +40 °C (Carbon steel)

Product	DFT (µm)
Zinc Clad II Series	75
<b>Total</b>	<b>75</b>

Nova-Plate UHS	450
<b>Total</b>	<b>450</b>

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



# SYSTEM 4



**System 4A:**  
Offshore and coastal environment,  
non-insulated, -20 °C to +80 °C  
(Carbon steel)

Product	DFT (µm)
Macropoxy L425	125
Epidek M153 <sup>(1)</sup>	3000
<b>Total</b>	<b>3125</b>

**System 4B:**  
Offshore and coastal environment,  
non-insulated, -20 °C to +80 °C  
(Carbon steel)

Product	DFT (µm)
Zinc Clad IV Series	60
Macropoxy 646	175
Macropoxy 646	175
Acrolon 7300	60
<b>Total</b>	<b>470</b>

# SYSTEM 6



**System 6A:**  
Offshore and coastal environment,  
non-insulated, -50 °C to +80 °C  
(Stainless steel when coating is  
specified)

Product	DFT (µm)
Macropoxy 646 (mist)	50
Macropoxy 646	100
Approved top coat	75
<b>Total</b>	<b>225</b>

Macropoxy L425	50
Macropoxy 646	100
Approved top coat	75
<b>Total</b>	<b>225</b>

Macropoxy L425	50
Macropoxy 267	100
Approved top coat	75
<b>Total</b>	<b>225</b>

**System 6B:**  
Offshore and coastal environment,  
non-insulated, -50 °C to +80 °C  
(HDG, when coating is specified)

Product	DFT (µm)
Macropoxy 646 (mist)	50
Macropoxy 646	100
Approved top coat	75
<b>Total</b>	<b>225</b>

Macropoxy K267 (mist)	50
Macropoxy 646	100
Approved top coat	75
<b>Total</b>	<b>225</b>

Macropoxy K267 (mist)	50
Macropoxy 267	100
Approved top coat	75
<b>Total</b>	<b>225</b>

**System 6C:**  
Offshore and coastal environment,  
insulated, -50 °C to +200 °C  
(Stainless steel)

Product	DFT (µm)
Heat Flex 650	125
Heat Flex 650	125
<b>Total</b>	<b>250</b>

Heat Flex 750	125
Heat Flex 750	125
<b>Total</b>	<b>250</b>

**System 6D:**  
Offshore and coastal environment,  
non-insulated, -50 °C to +80 °C  
(Aluminium when coating is  
specified)

Product	DFT (µm)
Macropoxy 646 (mist)	50
Macropoxy 646	100
Approved top coat	75
<b>Total</b>	<b>225</b>

Macropoxy L425	50
Macropoxy 646	100
Approved top coat	75
<b>Total</b>	<b>225</b>

Macropoxy L425	50
Macropoxy 267	100
Approved top coat	75
<b>Total</b>	<b>225</b>



# SYSTEM 7

System 7A:  
Splash zone, tidal zone and  
combined with CP, up to +50 °C  
(Carbon steel)

Epoxy

Product	DFT (µm)
Dura-Plate SW-501GF	500
Dura-Plate SW-501GF	500
Total	1000

Vinyl ester

Product	DFT (µm)
Magnalux 41V2	500
Magnalux 41V2	500
Total	1000

Polyester/Styrene free polyester)

Product	DFT (µm)
Magnalux 42PE	500
Magnalux 42PE	500
Total	1000

Magnalux 42SF	500
Magnalux 42SF	500
Total	1000

System 7B:  
Seawater combined with CP,  
up to +50 °C (Carbon steel)

Product	DFT (µm)
Dura-Plate SW-501	250
Dura-Plate SW-501	250
Total	500

Macropoxy 646	175
Macropoxy 646	175
Total	350

Macropoxy M922	175
Macropoxy M922	175
Total	350

Macropoxy M922M	250
Macropoxy M922M	250
Total	500

System 7C:  
Seawater combined with CP,  
up to +150 °C (Carbon steel)

Product	DFT (µm)
Approved for 200°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 180°C	
Dura-Sub C1330	175
Dura-Sub C1330	175
Total	350

Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 160°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 140°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 90°C	
Macropoxy L674	50
Macropoxy M922 (1)	350
Total	400

Approved for 80°C	
Macropoxy M922	175
Macropoxy M922	175
Total	350

System 7D:  
Splash zone, tidal zone and  
combined with CP, up to +50 °C  
(Stainless steel and non-ferrous  
alloys when coating is specified)

Product	DFT (µm)
Dura-Plate SW-501 GF	500
Dura-Plate SW-501 GF	500
Total	1000

Magnalux 42PE	500
Magnalux 42PE	500
Total	1000

Magnalux 42SF	500
Magnalux 42SF	500
Total	1000

System 7E:  
Seawater combined with CP, up  
to +50 °C (Stainless steel and  
non-ferrous alloys when coating is  
specified)

Product	DFT (µm)
Macropoxy 646	175
Macropoxy 646	175
Total	350

Macropoxy M922	175
Macropoxy M922	175
Total	350

Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

System 7F:  
Seawater combined with CP, up  
to +150 °C (Stainless steel and  
non-ferrous alloys when coating is  
specified)

Product	DFT (µm)
Approved for 200°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 180°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 160°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 140°C	
Dura-Sub C1230	175
Dura-Sub C1230	175
Total	350

Approved for 90°C	
Macropoxy L674	175
Macropoxy M922 (1)	175
Total	350

Approved for 80°C	
Macropoxy M922	175
Macropoxy M922	175
Total	350

(1) Macropoxy M922 can be applied in two coats.



# SYSTEM 8



**System 8:**  
HVAC controlled environment,  
-50 °C to +80 °C (Carbon steel)

Product	DFT (µm)
Macropoxy 646	150
<b>Total</b>	<b>150</b>

Macropoxy 400	150
<b>Total</b>	<b>150</b>

Macropoxy C425V2	150
<b>Total</b>	<b>150</b>

Macropoxy 4600	150
<b>Total</b>	<b>150</b>



# SYSTEM 9



**System 9:**  
Offshore and coastal environment,  
insulated, below -50 °C (Stainless  
steel, Non-ferrous metals)

Product	DFT (µm)
Heat-Flex 650	150
Heat-Flex 650	150
<b>Total</b>	<b>300</b>

Heat-Flex 750	150
Heat-Flex 750	150
<b>Total</b>	<b>300</b>

Heat-Flex ACE	250
Heat-Flex ACE	250
<b>Total</b>	<b>500</b>

Heat-Flex 1200/1200 Plus	125
Heat-Flex 1200/1200 Plus	125
<b>Total</b>	<b>250</b>

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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 - including protective liquid and powder, fire protection and resinous flooring - excel at combating corrosion and help customers achieve smarter, time-tested asset protection. We serve a wide array of markets across our rapidly growing international distribution footprint, including Bridge & Highway, Energy, High Value Infrastructure, Manufacturing & Processing, Marine, Rail, Power and Water & Wastewater.

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