

NORSOK – Coating system no. 1

(Shall be pre-qualified)



Carbon steel with operating temperature < 120°C

- Structural steel
- Exteriors of equipment, vessels, piping and valves (not insulated)

Typical systems for newbuilding's

Pre-qualifications tested according to Revision 5 of NORSOK M-501 are still valid as the coating systems also fulfil all requirements in Edition 6.

Other options are available – contact TSS

| System no. | Surface preparation | Coating system | DFT μm | Test report number |
|------------|---------------------|--|--|--|
| 1-102 | Sa 2½ | Barrier Penguard Express Hardtop XP | 75 150 <u>60</u> 285 | LAB10-0821-REP NORSOK M-501 Revision 5 |
| 1-136 | Sa 2½ | Barrier Penguard Universal Hardtop AX | 60 160 <u>60</u> 280 | 3400-15-022579 Mt09, Rev.1 NORSOK M-501 Edition 6 |
| 1-129 | Sa 2½ | Barrier Penguard Universal, alu Hardtop Pro | 60 160 <u>60</u> 280 | 3400-15-019770 Mt02 NORSOK M-501 Edition 6 |
| 1-130 | Sa 2½ | Resist 86 Penguard Tie Coat 100 Jotamastic Plus Hardtop Pro | 60 30 130 <u>75</u> 295 | 3400-15-019770 Mt03 NORSOK M-501 Edition 6 |
| 1-131 | Sa 2½ | Resist 86 Penguard Tie Coat 100 Jotamastic 90 WG Hardtop Optima | 75 35 150 <u>80</u> 340 | 3400-15-019770 Mt04 NORSOK M-501 Edition 6 |
| 1-90 | Sa 2½ | Baltoflake Baltoflake | 700 <u>700</u> 1400 | 3410-10-0014 Mt03 NORSOK M-501 Revision 5 |
| 1-180 | Sa 2½ | Barrier Smart Pack Penguard Express Hardtop XP | 60 160 <u>60</u> 280 | 3400-20-032250 Mt03 NORSOK M-501 Edition 6 |
| 1-177 | Sa 2½ | Barrier Smart Pack Penguard Universal Hardtop XP | 60 160 <u>60</u> 280 | 3400-20-032618 Mt01B NORSOK M-501 Edition 6 |

| | | | | |
|-------|---|--|---------------------------------------|--|
| 1-178 | Sa 2½ | Barrier Smart Pack Penguard EXA II Hardtop XP | 60 160 <u>60</u> 280 | 3400-20-032765 Mt01 NORSOK M-501 Edition 6 |
| 1-142 | Sa 2½ | Barrier Plus Jotamastic Smart Pack Hardtop One | 60 160 <u>60</u> 280 | SL 16615 NORSOK M-501 ed. 6 |
| 1-161 | Sa 2½ UHPWJ-WJ-2 | Barrier Smart Pack Jotamastic Smart Pack HB Hardtop One | 60 160 <u>60</u> 280 | 3400-16-024816 Mt06 Rev. B NORSOK M-501 ed. 6 |
| 1-158 | ≈Sa 2½ Bristle Blaster St 3 80-90 µm | Barrier Smart Pack Jotamastic Smart Pack HB Hardtop One | 60 160 <u>60</u> 280 | 3400-16-024816 Mt03 Rev A NORSOK M-501 ed. 6 |
| 1-157 | ≈Sa 2½ Grinded St 3 60-75 µm | Barrier Smart Pack Jotamastic Smart Pack HB Hardtop One | 60 160 <u>60</u> 280 | 3400-16-024816 Mt02 Rev B NORSOK M-501 ed. 6 |
| 1-173 | Sa 2½ Brush | Barrier Smart Pack Jotamastic Smart Pack HB Hardtop Smart Pack | 60 160 <u>60</u> 280 | NO17673 NORSOK M-501 ed. 6 |
| 1-154 | Sa 2½ | Barrier Smart Pack Jotamastic Smart Pack HB Hardtop AX | 60 160 <u>60</u> 280 | 3400-17-027222 NORSOK M-501 ed. 6 |
| 1-170 | Sa 2½ Brush | Jotamastic Smart Pack HB Jotamastic Smart Pack HB Hardtop One | 150 150 <u>50</u> 350 | 3400-17-025417 Mt01 NORSOK M-501 ed. 6 |
| 1-125 | Sa 2½ St 3 | Jotamastic 80, alum. Jotamastic 80, alum. Hardtop XP | 100 150 <u>50</u> 300 | 3410-13-012057 Mt 01 NORSOK M-501 ed. 6 |
| 1-168 | Sa 2½ Bristle Blaster St 3 80-90 µm Brush | Jotamastic 90 WG, alum. Jotamastic 90 WG Hardtop One | 150 150 <u>50</u> 350 | 3400-17-025417 Mt03 NORSOK M-501 ed. 6 |

* NORSOK M-501 Edition 6 and switching of topcoats:

“If agreed by the purchaser, the approved topcoat in a pre-qualified coating system, may substitute another pre-qualified topcoat, provided the intermediate coating is the same and the film-thickness of the topcoats are equal”

NORSOK – Coating systems no. 1

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- 1) Unless other application method is specified, airless spraying is the application method used.
 - 2) Other surface preparations are also approved for the same coating system. Available upon request.

Please contact Technical Sales Support department (+47 33457000 or tss@jotun.com) for further information.

Carbon steel with operating temperature > 120°C

- All insulated surfaces of tanks, vessels, piping
- Flare booms and crane booms

Underside of bottom deck included piping, jacket above splash zone and lifeboat stations are optional areas (to be decided in each project).

| 2A For thermally sprayed aluminium, use the following sealers: | | | |
|--|----------------------------|-----------------------|------------------------|
| System no. | Surface preparation | Coating system | DFT µm |
| 2A-1 | TSA | Penguard Tie Coat 100 | <u>15</u> 15 |
| 2A-2 | TSA | Solvalitt, aluminium | <u>15</u> 15 |
| 2B For thermally sprayed zinc or zinc alloys, use the following system: | | | |
| System no. | Surface preparation | Coating system | DFT µm |
| 2B-1 | Un-insulated <120°C | Penguard Tie Coat 100 | 15 |
| | | Penguard Pro | 125 |
| | | Hardtop Optima | <u>75</u> |
| | | | 215 |

See general notes in the NORSOK standard.

Internal surface of carbon steel tanks

| 3A Potable water tanks ¹⁾ | | | | |
|--|-------------------------------------|---|----------------------------------|--|
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3A | Sa 2½ | Tankguard DW Tankguard DW | 300 <u>300</u> 600 | |
| 3B Ballast water tanks/internal seawater filled compartments (shall be pre-qualified) | | | | |
| Pre-qualifications tested according to Edition 5 of NORSOK M-501 are still valid as the coating systems also fulfil all requirements in Edition 6. | | | | |
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3B-13 | Shoppripped steel | Jotamastic 87 Aluminium Jotamastic 87 | 160 <u>160</u> 320 | BGN-R2707467 NORSOK M-501 Edition 5 |
| 3B-11 | Shoppripped steel Sweep blasting | Jotacote Universal, alum. Jotacote Universal | 150 <u>150</u> 300 | BGN-R2706231 NORSOK M-501 Edition 5 |
| 3B-12 | Shoppripped steel Sweep blasting | Jotacote Universal, alum. Jotacote Universal | 160 <u>160</u> 320 | BGN-R2707247 NORSOK M-501 Edition 5 |
| 3C Tanks for stabilised crude, diesel and condensate ¹⁾ | | | | |
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3C | Sa 2½ | Tankguard Storage Tankguard Storage | 125 <u>125</u> 250 | |
| 3D Process vessels < 0.3 MPa, < 75°C ¹⁾ | | | | |
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3D | Sa 2½ | Chemflake Special Chemflake Special | 750 <u>750</u> 1500 | |

| 3E Process vessels < 7 MPa, < 80°C ¹⁾ | | | | |
|---|----------------------------|--------------------------------------|---------------------------------------|---------------------------|
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3E | Sa 2½ | Tankguard HB Marathon Marathon | 75 250 <u>250</u> 575 | |
| 3F Process vessels < 3 MPa, < 130°C ¹⁾ | | | | |
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3F | Sa 2½ | Tankguard SF | <u>300</u> 300 | |
| 3G Vessels for storage of methanol, mono ethyl glycol etc. | | | | |
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 3G | Sa 2½ | Tankguard Zinc | <u>90</u> 90 | |

¹⁾ Lining materials for tanks are subject to discussions. Other systems may be required depending on medium in the tank and exposure conditions.

Please contact Technical Sales Support department (+47 33457000 or tss@jotun.com) for further information.

Walkways, escape routes and lay down areas

Typical systems

Pre-qualifications tested according to Edition 5 of NORSOK M-501 are still valid as the coating systems also fulfil all requirements in Edition 6.

Other options are available- contact TSS

| System no. | Surface preparation | Coating system | DFT μm | Test report number |
|------------|---------------------|--|--|--|
| 4-1 | Sa 2½ | Baltoflake Baltoflake Baltoflake – Carborex - Baltoflake | 750 750 <u>600</u> 2100 | 410-02-0013 M13 |
| 4-2 | Sa 2½ | Jotamastic 80, alum. Jotamastic 80, alum. Jota Armour | 150 150 <u>1000</u> 1300 | 3410-10-0014 Mt06 NORSOK M-501 ed. 6 |
| 4-3 | Sa 2½ | Jotamastic 80 WG, alum. Jotamastic 80 WG, alum. Jota Armour WG | 150 150 <u>1000</u> 1300 | 3410-12-006106 Mt01 NORSOK M-501 ed. 6 |
| 4-5 | Sa 2½ | Penguard Universal Marathon 1000 GF + Aggregates Marathon IQ2 | 200 2300 <u>500</u> 3000 | SL 16552-2, issue 3 NORSOK M-501 ed. 6 |
| 4-6 | Sa 2½ | Marathon 1000 GF Marathon 1000 GF + Aggregates Marathon IQ2 | 750 1750 <u>500</u> 3000 | SL 16553, issue 3 NORSOK M-501 ed. 6 |
| 4-7 | Sa 2½ | Marathon 1000 XHB Marathon 1000 XHB + Aggregates Marathon IQ2 | 750 1750 <u>500</u> 3000 | NO 17432, issue 3 NORSOK M-501 ed. 6 |
| 4-9 | Sa 2½ | Marathon 550 +Aggregate Marathon 550 Hardtop XP | 900 500 <u>50</u> 1450 | 3400-18-029130 Mt01 N4 NORSOK M-501 ed. 6 |

NORSOK – Coating system no. 5

(passive fire protection material shall be pre-qualified)



Under fire protection

| 5A Under epoxy based fire protection | | | | |
|--|---------------------|-----------------------------|-------------------|--------------------|
| System no. | Surface preparation | Coating system | DFT μm | Test report number |
| 5A-2 | Sa 2½ | Barrier | 60 | |
| | | Penguard Tie Coat 100 | 25 | |
| | | Jotachar JF750 | * | |
| | | Epoxy tie-coat | ** | |
| | | Hardtop Optima/Pro/CA/XP/AX | *** | |
| 5A-3 | TSZ | Penguard Tie Coat 100 | 15 | |
| | | Jotachar JF750 | * | |
| | | Epoxy tie-coat | ** | |
| | | Hardtop Optima/Pro/CA/XP/AX | *** | |
| <p>Notes:</p> <p>* Jotachar JF750 film thickness will vary depending on steel size and fire duration requirements. Please consult your Jotun PFP representative.</p> <p style="text-align: center;"><u>The following guidelines are in accordance to NORSOK M501 rev.6</u></p> <p>Primers pre-qualified in NORSOK system no.1 may be used as a primer for the passive fire protection system. (Approved primers to be used are on the Jotachar approved primer list available on JOIN.)</p> <p>** NORSOK M-501 requires the use of an epoxy tie-coat on top of the epoxy based fire protection prior to application of topcoat.</p> <p>*** Topcoats pre-qualified in NORSOK system no.1 may be used on passive fire protection.</p> | | | | |
| 5B Under cement based fire protection | | | | |
| Please contact Technical Sales Support department (+47 33457000 or tss@jotun.com) for further information. | | | | |

6A Uninsulated stainless steel when painting is required Aluminium when painting is required

| System no. | Surface preparation | Coating system | DFT μm |
|------------|---|--------------------|-------------------|
| 6A-1 | Sweep blasting with non-metallic abrasive | Penguard Primer | 50 |
| | | Penguard Universal | 100 |
| | | Jotaproof Topcoat* | <u>75</u> |
| | | | 225 |
| 6A-2 | Sweep blasting with non-metallic abrasive | Penguard Primer | 50 |
| | | Penguard Universal | 100 |
| | | Hardtop AX* | <u>50</u> |
| | | | 200 |

*) If polysiloxane is required, use Hardtop Optima

6B Galvanised steel or insulated stainless steel piping and vessels at temperatures < 120°C

| System no. | Surface preparation | Coating system | DFT μm |
|------------|---|--------------------|-------------------|
| 6B-1 | Sweep blasting with non-metallic abrasive | Penguard Primer | 50 |
| | | Penguard Universal | 100 |
| | | Hardtop AX* | <u>50</u> |
| | | | 200 |

*) If polysiloxane is required, use Hardtop Optima

6C Stainless steel < 150°C

| System no. | Surface preparation | Coating system | DFT μm |
|------------|---|----------------|-------------------|
| 6C-1 | Sweep blasting with non-metallic abrasive | Epoxy HR | 125 |
| | | Epoxy HR | <u>125</u> |
| | | | 250 |

NORSOK – Coating system no. 7

(Shall be pre-qualified)



Carbon steel and stainless steel

- Splash zone
- Submerged ≤ 50°C
- Submerged > 50°C

7A Carbon steel, splash zone

Pre-qualifications tested according to Edition 5 of NORSOK M-501 are still valid as the coating systems also fulfil all requirements in Edition 6.

Other options are available- Please contact TSS

| System no. | Surface preparation | Coating system | DFT μm | Test report number |
|------------|---------------------|--|--|---|
| 7A-25 | Sa 2½ | Baltoflake Baltoflake | 700 700 1400 | 3410-10-0014 Mt03 NORSOK M-501 Edition 5 |
| 7A-36 | Sa 2½ | Baltoflake Ecolife Baltoflake Ecolife | 600 600 1200 | SL 12374 / SL 12375 NORSOK M-501 Edition 6 |
| 7A-37 | Sa 2½ | Marathon Marathon | 300 300 600 | SL 13379 NORSOK M-501 Edition 6 |
| 7A-47 | Sa 2½ | Marathon 1000 GF Marathon 1000 GF | 500 500 1000 | 3400-15-022579 Mt11 NORSOK M-501 Edition 6 |
| 7A-39 | Sa 2½ | Penguard Pro GF Penguard Pro GF | 300 300 600 | SL 13348 NORSOK M-501 Edition 6 |
| 7A-56 | Sa 2½ | Marathon 1000 XHB Marathon 1000 XHB Hardtop XP | 500 500 60 1060 | NO 18373 NORSOK M-501 Edition 6 |
| 7A-57 | Sa 2½ | Marathon 1000 XHB Hardtop XP | 600 50 650 | NO 18374 NORSOK M-501 Edition 6 |
| 7A-58 | Sa 2½ | Marathon 550 Marathon 550 | 300 300 600 | 3400-18-029130 Mt02 N7A NORSOK M-501 Edition 6 |
| 7A-59 | Sa 2½ | Jotacote Universal S120 Jotacote Universal S120 | 300 300 600 | 3400-20-032323 Mt15 NORSOK M-501 Edition 6 |

7B Carbon steel, submerged

Pre-qualifications tested according to Edition 5 of NORSOK M-501 are still valid as the coating systems also fulfil all requirements in Edition 6.

| System no. | Surface preparation | Coating system | DFT μm | Test report number |
|------------|---------------------|--|---------------------------------|---|
| 7B-34 | Sa 2½ | Jotamastic 90 WG, Alu. Jotamastic 90 WG | 200 <u>150</u> 350 | 3410-12-009182 Mt07 NORSOK M-501 Edition 6 |
| 7B-29 | Sa 2½ | Jotamastic SF, Alu. Jotamastic SF | 150 <u>200</u> 350 | 3410-10-0049 Mt07 NORSOK M-501 Edition 5 |
| 7B-32 | Sa 2½ | Jotamastic SF WG, Alu. Jotamastic SF WG | 200 <u>150</u> 350 | 3410-11-003053 Mt01 NORSOK M-501 Edition 5 |
| 7B-28 | Sa 2½ | Marathon Marathon | 250 <u>250</u> 500 | Report: SL 11587 NORSOK M-501 Edition 5 |
| 7B-48 | Sa 2½ | Marathon Marathon | 300 <u>200</u> 500 | SL 15052 NORSOK M-501 Edition 6 |
| 7B-35 | Sa 2½ | Penguard Pro, Alu. Penguard Pro | 200 <u>150</u> 350 | SL 13341 NORSOK M-501 Edition 6 |
| 7B-47 | Sa 2½ | Penguard Pro GF Penguard Pro GF | 175 <u>175</u> 350 | 3400-15-022579 Mt13 NORSOK M-501 Edition 6 |
| 7B-41 | Sa 2½ | Penguard Universal, Alu. Penguard Universal | 175 <u>175</u> 350 | 3400-14-015786 Mt 08 NORSOK M-501 Edition 6 |
| 7B-51 | Sa 2½ | Marathon 550 Marathon 550 | 200 <u>200</u> 400 | 3400-18-029130 Mt03 N7B NORSOK M-501 Edition 6 |
| 7B-52 | Sa 2½ | Jotacote Universal S120 Jotacote Universal S120 | 175 <u>175</u> 350 | 3400-20-032323 Mt16 NORSOK M-501 Edition 6 |

| 7C Carbon steel, submerged > 50°C - Contact TSS | | | | |
|---|---------------------|--|--|---|
| System no. | Surface preparation | Coating system | DFT µm | Test report number |
| 7C-2 | Sa 2½ | Tankguard Plus Tankguard Plus Tankguard Plus | 125 125 <u>100</u> 350 | SINTEF F26843 / SL 15150 NORSOK M-501 Edition 6 |
| 7C-3 | Sa 2½ | Tankguard SF Tankguard SF | 175 <u>175</u> 350 | SINTEF F26783 / 3400-15-020723v Mt01 NORSOK M-501 Edition 6 |
| 7C-4 | Sa 2½ | Marathon 550 Marathon 550 | 200 <u>200</u> 400 | Report NO20488_3 HTCD NORSOK M-501 Edition 6 |

Structural carbon steel with max. operating temperature $\leq 80^{\circ}\text{C}$ in internal and fully dry and ventilated areas

| System no. | Surface preparation | Coating system | DFT μm |
|------------|---------------------|---------------------------------------|------------------------------|
| 8A-1 | Sa 2½ | Penguard Universal | <u>150</u> 150 |
| 8A-2 | Sa 2½ | Jotamastic 90 WG | <u>150</u> 150 |
| 8B-1 | Sa 2½ | Barrier Plus Penguard Tie Coat 100 | 60 <u>25</u> 85 |

Bulk supplied carbon steel valves with max. operating temperature up to 150°C

| System no. | Surface preparation | Coating system | DFT μm |
|------------|---------------------|----------------------|---------------------------------|
| 9-1 | Sa 2½ | Epoxy HR Epoxy HR | 150 <u>150</u> 300 |