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Revision: Completely revised: Corrosivity category cancelled; Si-based coating systems cancelled; IMM-based coating systems established.

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1 Scope

This Linde Standard (LS) specifies protective coating systems for carbon steel (CS) and stainless steel (SS).

2 Coating systems for CS

2.1 Corrosivity category C4

Table 1: Coating systems without insulation

Surface preparation: Sa 2½, rust grade A, B or C

System No.	OT [°C]	Prime coat	NDFT [µm]	Intermediate coat	NDFT [µm]	Top coat	NDFT [µm]	NDFT Total [µm]	Max. DFT [µm]	Expected durability	
										high	very high
C4.01	≤ 120	EP Zn(R), IOZ Zn(R)	50 ^{1), 2)}	EP – MIO	100	PUR	60 ⁴⁾	210 ¹⁾	425 ¹⁾	X	
C4.02	≤ 120	EP Zn(R), IOZ Zn(R)	50 ^{1), 2)}	EP – MIO	160	PUR	60 ⁴⁾	270 ¹⁾	575 ¹⁾		X
C4.03 ³⁾	< 400	IOZ Zn(R)	50 ^{1), 2)}	n/a	n/a	n/a	n/a	50 ¹⁾	75 ¹⁾	n/a	n/a
C4.04	> 120 < 400	IOZ Zn(R)	50 ^{1), 2)}	-	-	IMM	125 ⁶⁾	175 ¹⁾	265 ¹⁾	X	
C4.05	> 120 < 400	IOZ Zn(R)	50 ^{1), 2)}	IMM	100	IMM	100	250 ¹⁾	375 ¹⁾		X
C4.06	> 400 ≤ 650	IMM	75 ¹⁾	-	-	IMM	100	175 ¹⁾	270 ¹⁾	X	X

¹⁾ The given NDFT for prime coats and max. DFT are reduced by correction value "medium", 25 µm acc. to ISO 19840

²⁾ DFT of IOZ-primer shall not exceed 75 µm.

³⁾ Applicable for bulk valves and similar items for temporary protection during transport and storage only. Coating system to be completed on site/ module yard.

⁴⁾ DFT of PUR top-coat shall not exceed 100 µm.

⁶⁾ Recommended min. DFT in the TDS of PAINT MANUFACTURER shall be observed

Table 2: Coating systems with insulation

Surface preparation: Sa 2½, rust grade A, B or C

System No.	OT [°C]	Prime coat	NDFT	Intermediate coat	NDFT [µm]	Top coat	NDFT [µm]	NDFT Total [µm]	Max. DFT [µm]	Expected durability	
										high	very high
C4.21	≤ 120	EP Zn(R), IOZ Zn(R)	50 ^{1), 2)}	EP – MIO	100	EP (PUR)	60 ³⁾	210 ¹⁾	425 ¹⁾	X	
C4.22	≤ 120	EP Zn(R), IOZ Zn(R)	50 ^{1), 2)}	EP – MIO	160	EP (PUR)	60 ³⁾	270 ¹⁾	575 ¹⁾		X
C4.23	≤ 200	EPP	75 ¹⁾	-	-	EPP	100	175 ¹⁾	270 ¹⁾	X	
C4.24	≤ 200	EPP	100 ¹⁾	-	-	EPP	125	225 ¹⁾	340 ¹⁾		X
C4.25	> 200 ≤ 400	IOZ Zn(R)	50 ^{1), 2)}	-	-	IMM	125 ⁶⁾	175 ¹⁾	265 ¹⁾	X	
C4.26	> 200 ≤ 400	IOZ Zn(R)	50 ^{1), 2)}	IMM	100	IMM	100	250 ¹⁾	375 ¹⁾		X
C4.27 ³⁾	≤ 400	IOZ Zn(R)	50 ^{1), 2)}	n/a	n/a	n/a	n/a	50 ¹⁾	75 ¹⁾	n/a	n/a
C4.28	> 400 ≤ 650	IMM	100 ¹⁾	-	-	IMM	125	225 ¹⁾	340 ¹⁾	X	X

¹⁾ The given NDFT for prime coats and max. DFT are reduced by correction value "medium", 25 µm acc. to ISO 19840.

²⁾ DFT of IOZ-primer shall not exceed 75 µm.

³⁾ Applicable for bulk valves and similar items for temporary protection during transport and storage only. Coating system to be completed on site/ module yard.

⁴⁾ DFT of PUR top-coat shall not exceed 100 µm.

⁶⁾ Recommended min. DFT in the TDS of PAINT MANUFACTURER shall be observed.

2.2 Corrosivity category C5

Table 3: Coating systems without insulation

Surface preparation: Sa 2½, rust grade A, B or C

System No.	OT [°C]	Prime coat	NDFT [µm]	Intermediate coat	NDFT [µm]	Top coat	NDFT [µm]	NDFT Total [µm]	Max. DFT [µm]	Expected durability	
										high	very high
C5.01	≤ 120	EP Zn(R), IOZ Zn(R)	60 ^{1), 2)}	EP – MIO	160	PUR	60 ⁴⁾	280 ¹⁾	575 ¹⁾	X	
C5.02	≤ 120	EP Zn(R), IOZ Zn(R)	60 ^{1), 2)}	EP – MIO	200	PUR	60 ⁴⁾	320 ¹⁾	675 ¹⁾		X
C5.03 ³⁾	≤ 400	IOZ Zn(R)	60 ^{1), 2)}	n/a	n/a	n/a	n/a	60 ¹⁾	75 ¹⁾	n/a	n/a
C5.04	>120 ≤ 400	IOZ Zn(R)	60 ^{1), 2)}	IMM	100	IMM	100	260 ¹⁾	375 ¹⁾	X	
C5.05	>120 ≤ 400	IOZ Zn(R)	60 ^{1), 2)}	IMM	125	IMM	125	310 ¹⁾	450 ¹⁾		X
C5.06	> 400 ≤ 650	IMM	100 ¹⁾	-	-	IMM	125	225 ¹⁾	340 ¹⁾	X	X

¹⁾ The given NDFT for prime coats and max. DFT are reduced by correction value "medium", 25 µm acc. to ISO 19840
²⁾ DFT of IOZ-primer shall not exceed 75 µm.
³⁾ applicable for bulk valves and similar items for temporary protection during transport and storage only. Coating system to be completed on site/ module yard
⁴⁾ DFT of PUR top-coat shall not exceed 100 µm.

Table 4: Coating systems with insulation

Surface preparation: Sa 2½, rust grade A, B or C

System No.	OT [°C]	Prime coat	NDFT [µm]	Intermediate coat	NDFT [µm]	Top coat	NDFT [µm]	NDFT Total [µm]	Max. DFT [µm]	Expected durability	
										high	very high
C5.21	≤ 120	EP Zn(R), IOZ Zn(R)	60 ^{1), 2)}	EP – MIO	160	EP (PUR)	60 ⁴⁾	280 ¹⁾	575 ¹⁾	X	
C5.22	≤ 120	EP Zn(R), IOZ Zn(R)	60 ^{1), 2)}	EP – MIO	200	EP (PUR)	60 ⁴⁾	320 ¹⁾	675 ¹⁾		X
C5.23	≤ 200	EPP	100 ¹⁾	-	-	EPP	125	225 ¹⁾	340 ¹⁾	X	
C5.24	≤ 200	EPP	125 ¹⁾	-	-	EPP	150	275 ¹⁾	420 ¹⁾		X
C5.25	> 200 ≤ 400	IOZ Zn(R)	60 ^{1), 2)}	IMM	100	IMM	100	260 ¹⁾	375 ¹⁾	X	
C5.26	> 200 ≤ 400	IOZ Zn(R)	60 ^{1), 2)}	IMM	125	IMM	125	310 ¹⁾	450 ¹⁾		X
C5.27 ³⁾	≤ 400	IOZ Zn(R)	60 ^{1), 2)}	n/a	n/a	n/a	n/a	60 ¹⁾	75 ¹⁾	n/a	n/a
C5.28	> 400 ≤ 650	IMM	100 ¹⁾	-	-	IMM	125	225 ¹⁾	340 ¹⁾	X	X

¹⁾ The given NDFT for prime coats and max. DFT are reduced by correction value "medium", 25 µm acc. to ISO 19840
²⁾ DFT of IOZ-primer shall not exceed 75 µm.
³⁾ applicable for bulk valves and similar items for temporary protection during transport and storage only. Coating system to be completed on site/ module yard
⁴⁾ DFT of PUR top-coat shall not exceed 100 µm.

3 Coating systems for SS

For the technical requirement of protective coating refer to LS 148-06 Part 01, Para. 4.5

Table 5: Coating systems without insulation

Surface preparation: Sweep blast cleaning

System No.	OT [°C]	Prime coat	NDFT	Intermediate coat	NDFT [µm]	Top coat	NDFT [µm]	NDFT Total [µm]	Max. DFT [µm]	Expected durability	
										high	very high
SS.01	≥ 60 ≤ 120	EP	60 ¹⁾	EP – MIO	140	PUR	60 ⁴⁾	260 ¹⁾	540 ¹⁾	X	
SS.02	≥ 60 ≤ 120	EP	60 ¹⁾	EP – MIO	180	PUR	60 ⁴⁾	300 ¹⁾	640 ¹⁾		X
SS.03	> 120 ≤ 200 (≤ 540 for intermittent service)	IMM	100 ¹⁾	-	-	IMM	125	225 ¹⁾	340 ¹⁾	X	X

¹⁾ The given NDFT for prime coats and max. DFT are reduced by correction value "medium", 25 µm acc. to ISO 19840

4) DFT of PUR top-coat shall not exceed 100 μm .

Table 6: Coating systems with insulation

Surface preparation: Sweep blast cleaning

System No.	OT [°C]	Prime coat	NDFT	Intermediate coat	NDFT [μm]	Top coat	NDFT [μm]	NDFT Total [μm]	Max. DFT [μm]	Expected durability	
										high	very high
SS.21	≥ -10 ≤ 120	EP	60 ¹⁾	EP – MIO	140	EP (PUR)	60 ⁴⁾	260 ¹⁾	540 ¹⁾	X	
SS.22	≥ -10 ≤ 120	EP	60 ¹⁾	EP – MIO	180	EP (PUR)	60 ⁴⁾	300 ¹⁾	640 ¹⁾		X
SS.23 ⁵⁾	≤ 200	EPP	100 ¹⁾	--	--	EPP	125	225 ¹⁾	340 ¹⁾	X	
SS.24 ⁵⁾	≤ 200	EPP	125 ¹⁾	--	--	EPP	150	275 ¹⁾	420 ¹⁾		X
SS.25	≤ 200 (≤ 540 for intermittent service)	IMM	100 ¹⁾	--	--	IMM	125	225 ¹⁾	340 ¹⁾	X	X

¹⁾ The given NDFT for prime coats and max. DFT are reduced by correction value "medium", 25 µm acc. to ISO 19840

4) DFT of PUR top-coat shall not exceed 100 μm .

5) if OT > 60 °C and insulated with electrical tracing:

- piping: Al-foil wrapping (pure Al-foil, thickness 0.1 mm)
- equipment: protective coating