

CHEMICAL MANUFACTURER Master Inspection Report

according to the requirements of Appendix A6 of the QUALICOAT Specifications

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QQM Section: 9.1.3.3

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Version: 02

No. Pages: 20



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QUALIBOAT		Rep	oort no.	nspection Repor	t - F-MIR-Cr	lem
COMPANY						
Name						
Address sample preparation						
Phone						
E-mail						
Contact person						
Date of report						
Production Site Address						
INSPECTION: CHE	MICAL DD	ETDEATME	NTC			
	INICAL PR	EIREAIWE	NIS			
TYPE OF INSPECTION New approval ⁽¹⁾ □	Renewal		Repetiti	on ⁽³⁾]	
APPROVAL NUMBER(2)						
(A-NO. / AP-NO.):	DODUCT:					
NAME OF PRETREATMENT F BATCH NUMBER OF	RODUCT:					
PRETRETMENT PRODUCT:						
PROUCTION PLANT Central production site □	Other produc	ction site (ANNEX I)		Technical servi	ice centre	
Please mark if the following A						
ANNEX I: Other Production Site				tdoor Exposure		
TYPE OF PRETREATMENT SY	YSTEM					
Chrome(VI)-free □		Anodic + Chrom	ne(VI)-free ⁽²	2)		
Yes ⁽¹⁾	No		Rinse	No Rinse		
Dual use \qed		Einal Dinaa	1 1			
		Final Rinse				
INSPECTION Date of Inspection		Fillal Killse				

- (1) Only for granting of an approval or in case of a repetition.
- = Approval for chemical pretreatment system (conversion coating) for etched material = Approval for chemical pretreatment system (conversion coating) for pre-anodised material
- (3) Products intended for dual use shall be tested both ways. This implies that all tests must be done in duplicate, namely once with and once without the rinse pretreatment step. Separate F-MIR-Chem form shall be used for each.
- (4) Anodic pretreatment systems shall be tested both ways. This implies that all tests must be done in duplicate, namely once with and once without the anodic pretreatment process. Separate F-MIR-Chem form shall be used for each.

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Second Laboratory(3) Name of inspector (first and last name)



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1. TECHNICAL INFORMATION (CHEMICAL SUPPLIER'S TDS)

A D.D.I	IOATION METUOD (1) (2)				
APPL	ICATION METHOD (1) (2)				
PRET	REATMENT SYSTEM'S TE	VERSION			
	CESS CYCLE (2) uctivity Rinse (before / after)				
No.	Step	Product Name / Conductivity [µS]	Temperature [°C]	Concentration pH	Time [min]
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
	ANALYTICAL METHODS FOR BATH (Titration, pH, Conductivity / Frequency)				
	ANALYTICAL METHOD FOR COATING WEIGHT MEASUREMENT				
OTHE	R ANALYSES (Dye Spot Test				
otheletc.) (4)	R RECOMMENDATIONS (Equ	uipment, Handling, Storage,			
CONV	ERSION COATING COLOURI	ESS?			

NOTES:

- (1) Spraying and / or immersion
- (2) The manufacturer is responsible for ensuring that the cycle used by the coating applicator is suitable for obtaining a coated product conforming to the QUALICOAT Specifications. What are the limits for demineralised water before / after conversion coating?
- (4) The technical specifications must make clear which items are compulsory, for instance does "recommended" mean compulsory or not?



2. TESTING PROGRAMME

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,		
esence of a represe	ntative of the manu	facturer
upervision of Mr. / N	Лs.	
spraying	immersion	
Temperature [°C]	Concentration pH	Time [min]
Prescribed	Measured	Unit
		g/m²
		g/m²

Yes

No

2.1	PANEL PREPARATION	N					
The sa	mples were prepared on						
□ In	the laboratory recognised	d by QUALICO	AT in the p	resence of a represer	ntative of the manu	factu	rer
□ In	the laboratory of the che	mical manufact	turer under	supervision of Mr. / N	⁄ls.		
Proce	ess Cycle during the pane	l preparation					
Applic	ation method used for the pa	anel preparation		spraying	immersion		
No.	Step	Product I		Temperature [°C]	Concentration pH		Time [min]
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
				Prescribed	Measured		Unit
Etchi	ng degree		Profiles				g/m²
(1-2 g/m² Chemical pretreatment system) (≥ 2 g/m² Anodic pretreatment system)		Panels				g/m²	
Weigl	ht / concentration convers	sion coating					
(lower limit for corrosion tests on AA 6060 or AA 6063)							
Weight / concentration conversion coating							
(uppe	r limit for mechanical tests o	n AA 5005-H24 (or -H14)				
	rocess parameters of the tec inspection and are in accord				n.	Yes	No □
Does the data sheet specify whether the product is a rinse or a no-rinse system?					No		

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Does the specification of the conductivity of the rinsing process in the technical data sheet before

and/or after conversion coating correspond to the QUALICOAT specifications?

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2.2 THICKNESS OF THE ANODIC PRETREATMENT (only for Anodic systems)

2.2.1 Panels AA 5005-H24 / AA 5005-H14

No.		Measured thickness [µm]			Average	
NO.	1	2	3	4	5	Average [µm]
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

2.2.2 Profiles AA 6060 / AA 6063

No.	Measured thickness [μm]					Average
INO.	1	2	3	4	5	Average [µm]
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Anodic pretreatment parameters according to QUALICOAT-Specifications	Yes □	No
All test specimens were properly contacted (verification by coating thickness measurement)	Yes □	No
Remarks		

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2.3 **COATING MATERIAL & STOVING CONDITIONS**

In the table below, the inspector must record the progressive temperature measured on the coldest part, the pertinent time measured and the stoving times specified by the coating manufacturer.

2.3.1 Class 1: Powder, Metallic colour

□ RAL 9006 □ RAL 9007	Powder Manufacturer	Product Name
P-		

STOVING CONDITIONS SPECIFIED BY THE MANUFACTURER	MEASURED			STOVING INSTALLATION		
Time [min] Temperature of parts [°C]	Time [min]	Temperature of parts [°C]		Duration [min]	Set value [°C]	

2.3.2 Class 2: Powder, Category 1

RAL 9010	Powder Manufacturer	Product Name
P-		

STOVING CONDITIONS SPECIFIED BY THE MANUFACTURER		MEASURED		STOVING INSTALLATION		
Time [min]	Temperature of parts [°C]	Time [min]	Temperature of parts [°C]	Duration [min]	Set \ [°	
Stoving curves	for each powder coa	ating system affixed	d as additional files?		Yes	No
Remarks						

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2.3.3 Class 3: Powder / Liquid Coating (when requested by the supplier)

			7					
☐ Class 3 ☐ Liquid: RAL		Powder Manufacturer		Product Name				
P-								
STOVING CONDITI SPECIFIED BY T MANUFACTURE	HE	MEA	SURED			VING LLATION		
Time [min] Temp	erature rts [°C]	Time [min]	e [min] Temperature of parts [°C]		uration [min]	Set value [°C]		
	10 [0]		or parts [o]		,,,,,,		21	
Stoving curves for each	n powder d	oating system affixe	ed as additional fil	es?		Yes	No	
Remarks								
3. EQUIPMEN PRODUCTION			RATORY A	T CENT	RAL			
3.1 ANALYTICAL II	NSTRUME	NT FOR TESTING	OF THE CONVE	RSION COA	TING WEI	GHT		
Make		Mod	del		No.			
Date of last maintenance	e / service	recorded						
Function correct [incorrect						
Remarks								
3.2 ANALYTICAL E	BALANCE	FOR DETERMININ	G WEIGHT LOS	S				
Make		Mod	del		No.			
Date of last maintenance	e/service r	ecorded						
Function correct		Incorrect (precision	n 0.1mg) 🗆					
Remarks								

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3.3 CUTTII	NG TOOL FOR	CROSS-CUT	ADHESION	TEST (ISO 2409)		
Make			Model		No.	
Function Adhesive tape Distances betw		incorrect Yes No		□ 3 mm		
Remarks						
3.4 CUPPI	NG TESTER (IS	SO 1520)				
Make			Model		No.	
Visual assessn	nent g	ood 🗆	not good □			
If not good, ind	icate the reasor	ns				
Function	cor	rect 🗆	incorrect \square			
Remarks						
3.5 IMPAC	T TESTER (ISC) 6272-1, ISO	6272-2, AST	ΓM D 2794)		
Make			Model		No.	
Visual assessm	nent g	ood 🗆	not good □			
If not good, ind	icate the reason	S				
Function	cor	rect 🗆	incorrect \square			
Remarks						
3.6 APPAF	RATUS FOR BE	ND TEST (IS	O 1519)			
Make			Model		No.	
Visual assessm	nent go	ood 🗆	not good \square			
If not good, ind	icate the reason	S				
Function	cor	rect	incorrect \square			
Remarks						



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3.7 ACETIO	C ACID SALT SPRAY C	CABINET (ISO 9227	7)		
Make		Model		No.	
Visual assessm	nent good 🗆	not good □			
If not good, ind	icate the reasons				
Function	correct □	incorrect			
Remarks					
3.8 CONS	TANT CLIMATE CONDE	ENSATION CABIN	ET (ISO 6270-2)		
Make		Model		No.	
Visual assessm	nent good 🗆	not good □			
If not good, ind	icate the reasons				
Function	correct □	incorrect			
Remarks					
3.9 RESIS (ISO 22	TANCE TO HUMID ATN 2479)	OSPHERES CON	TAINING SULPHUR D	IOXIDE	- CABINET
Make		Model		No.	
Visual assessm	nent good 🗆	not good □			
If not good, ind	icate the reasons				
Function	correct □	incorrect			
Remarks					
3.10 FILIFO	RM CORROSION CABI	NET (ISO 4623-2)			
Make		Model		No.	
Visual assessm	nent: good 🗆	not good □			
If not good, ind	icate the reasons				
Function	correct □	incorrect			

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If not; in which laboratory this test will be outsourced

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Remarks



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3.11 APPARATUS FOR TESTING WET ADHESION (QUALICOAT)

7.		THIC WEI ABIL	ololi (do/leloo/	,	
Make			Model	No.	
Visual ass	sessment: god	od □ not g	ood 🗆		
If not good	d, indicate the reasons				
Function:	corre	ect 🗆 incor	rect		
Remarks:					
MIR-CH	EM VERIFIED BY:				
Electror	Inspector's nic or Physical Signat	ure	Remarks:		
Date:	DD/MM/YYYY				
	ised Chemical Supplication or Physical Signat		Remarks:		
Date:	DD/MM/YYYY				

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4. LABORATORY TESTS

4.1 MECHANICAL TESTS (ONLY FOR THE MASTER LABORATORY)

For the mechanical tests all laboratories shall use QUALICOAT specified alloy AA 5005-H24 or AA 5005-H14 (AlMg1 - semihard). The weight of the conversion coating shall be close to the upper limit for mechanical test samples, especially for the adhesion test.

The chemical composition was analysed as follows:

	Si	Mg	Cu	Mn	Zn	Ni	Fe	Pb	Bi	Cr	Ti	Sn	V	Ca	Ве	Al
Content wt%																

Remarks

4.2 CLASS 1: POWDER, METALIC COLOUR (RAL 9006 or RAL 9007)

Acceptable value: 0	Sample 1 µm ☐ satisfactory ☐ not satisfactory	Sample 2 µm satisfactory not satisfactory	Sample 3 µm □ satisfactory
· 	□ satisfactory	satisfactory	□ satisfactory
· 	_ ´		
4.2.2 Cupping (ISO 1520)	_ ´		
4.2.2 Cupping (ISO 1520)	not satisfactory	not satisfactory	I was and a second
4.2.2 Cupping (ISO 1520)			not satisfactory
	μm	μm	μm
No cracking or detachment at a depth of 5 mm	satisfactory	satisfactory	satisfactory
	not satisfactory	not satisfactory	not satisfactory
4.2.3 Bend test (ISO 1519)	μm	μm	μm
No cracking or detachment at a diameter of 5 mm	satisfactory	satisfactory	☐ satisfactory
	not satisfactory	not satisfactory	not satisfactory
4.2.4 Impact test (ISO 6272-1 or 2 / ASTM D 2794)	μm	μm	μm
No cracking or detachment at 2.5 Nm following the tape pull adhesion test	satisfactory	satisfactory	satisfactory
	not satisfactory	not satisfactory	not satisfactory



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4.3 CLASS 2: POWDER, CATEGORY 1 (RAL 9010)

Snoo	ified minimum thickness, 60 um	RAL 9010		
		Sample 1	Sample 2	Sample 3
4.3.1	Dry adhesion (ISO 2409)	μm	μm	μm
	Acceptable value: 0			
		☐ satisfactory ☐ not satisfactory	☐ satisfactory ☐ not satisfactory	☐ satisfactory ☐ not satisfactory
4.3.2	Cupping (ISO 1520)	•	·	•
	No detachment at a depth of 5 mm following the tape pull adhesion	μm	μm	μm
	test	☐ satisfactory ☐ not satisfactory	☐ satisfactory ☐ not satisfactory	☐ satisfactory ☐ not satisfactory
4.3.3	Bend test (ISO 1519)	-		•
	No detachment at a diameter of 5 mm following the tape pull	μm	μm	μm
	adhesion test	☐ satisfactory	☐ satisfactory	☐ satisfactory
131	Impact test (ISO 6272-1 or 2 / ASTM D 2794)	not satisfactory	not satisfactory	not satisfactory
4.3.4	No detachment at 2.5 Nm following the tape pull adhesion test	μm	μm	μm
	no detacriment at 2.3 Nm following the tape pull adhesion test	satisfactory	satisfactory	satisfactory
		not satisfactory	not satisfactory	not satisfactory
4.4	CLASS 3: POWDER <u>or</u> LIQUID COATING			
Spec	ified minimum thickness: 60 µm	☐ Class 3 /	☐ Liquid Coatir	
	·	Sample 1	Sample 2	Sample 3
4.4.1		μm	μm	μm
	Acceptable value: 0			
		satisfactory	satisfactory	satisfactory
		not satisfactory	not satisfactory	not satisfactory
4.4.2	Cupping (ISO 1520)	μm	μm	μm
	No detachment at a depth of 5 mm following the tape pull adhesion test.	satisfactory	satisfactory	satisfactory
	- two-component liquid coatings: minimum 3 mm	not satisfactory	not satisfactory	not satisfactory
4.4.2	- water-thinnable liquid coatings: minimum 3 mm			
4.4.3	Bend test (ISO 1519)	μm	μm	μm
		•	·	μπ
	No detachment at a diameter of 5 mm following the tape pull adhesion test.	satisfactory	satisfactory	satisfactory
4.4.4	adhesion test for two-component and water-thinnable liquid coatings: use an 8	satisfactory	satisfactory	satisfactory
4.4.4	adhesion test for two-component and water-thinnable liquid coatings: use an 8 mm mandrel.	satisfactory not satisfactory	satisfactory not satisfactory	satisfactory not satisfactory
4.4.4	adhesion test for two-component and water-thinnable liquid coatings: use an 8 mm mandrel. Impact test (ISO 6272-1 or 2 / ASTM D 2794)	□ satisfactory □ not satisfactory µm	□ satisfactory □ not satisfactory µm	□ satisfactory □ not satisfactory µm

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5. CORROSION TESTS

5.1 CORROSION TESTS

For the corrosion tests all laboratories shall use QUALICOAT specified alloy AA 6060 or AA 6063. The weight of the conversion coating shall be close to the system's lower limit for corrosion test samples.

The chemical composition was analysed as follows:

	Si	Mg	Cu	Mn	Zn	Ni	Fe	Pb	Bi	Cr	Ti	Sn	V	Ca	Ве	Al
Content wt%																

R	е.	m	а	r	ks
ı 🔪	$\overline{}$		ч		I\O

5.2 CLASS 1: POWDER, METALIC COLOUR (RAL 9006 or RAL 9007)

						RAL 9	0006	/ 🗆	RAL 9	9007			
Spec	ified minimum thickness:		Ma	ster La	aborat	ory			Sec		aborat		
60 μn	n	Sam	ple 1	Sam	ple 2	Sam	ple 3	Sam	mple 1 Sample 2				ple 3
5.2.1	Resistance to humid atmospheres containing		μm		μm		μm		μm		μm		μm
	sulphur dioxide (ISO 22479)		mm		mm		mm		mm		mm		mm
	No infiltration exceeding 1 mm on both		R	esults s	satisfac	tory ac	cording	to QUA	ALICOA	T-Spe	cificatio	ns	
	sides of the scratch, and no change in colour or blistering in excess of 2 (S2)		Yes No		Yes No		Yes No		Yes No		Yes No		Yes No
5.2.2	Acetic acid salt spray (ISO 9227)		μm	-	μm		μm		μm		μm		μm
	Section 2.10 of Specifications					Le	ength o	f filame	nts				
	Length of filaments: max 4 mm Infiltration: max 16 mm2/10 cm		mm		mm		mm		mm		mm		mm
	No blistering in excess of 2 (S2)					Infil	tration	mm²/10	cm]	•			
			R	esults	satisfac	tory ac	cording	to QU	ALICOA	AT-Spe	cificatio	ns	
			Yes No		Yes No		Yes No		Yes No		Yes No		Yes No
5.2.3	Constant climate condensation		μm		μm		μm		μm		μm		μm
	(ISO 6270-2)		mm		mm		mm		mm		mm		mm
	No infiltration exceeding 1 mm on both sides of the scratch, and no change in colour or blistering in excess of 2 (S2)		R	esults	satisfac	tory ac	cording	to QU	ALICOA	AT-Spe	cificatio	ns	
			Yes No		Yes No		Yes No		Yes No		Yes No		Yes No
5.2.4	Wet adhesion test (QUALICOAT)		μm		μm		μm		μm		μm		μm
	Slight colour change permissible		R	esults	satisfac	tory ac	cording	to QU	ALICOA	AT-Spe	cificatio	ns	
	No detachment No blistering in excess of 2 (S2)		Yes		Yes		Yes		Yes		Yes		Yes
			No		No		No		No		No		No

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5.2.5	Filiform corrosion (ISO 4623-2) L (longest filament) ≤ 4 mm M (average length of filaments) ≤ 2 mm	μn	n		μm		μm		μm		μm		μm
		Longest Filament (L)											
		mr	n		mm		mm		mm		mm		mm
			•		A	verage	Length	of Fila	ments (M)			
		mr	n		mm		mm		mm		mm		mm
		Results satisfactory according to QUALICOAT-Specifications											
		☐ Yes	;		Yes		Yes		Yes		Yes		Yes
		☐ No			No		No		No		No		No
Rema	arks												

CLASS 2: POWDER, CATEGORY 1 (RAL 9010)

		RAL 9010													
Specified minimum thickness: 60 µm		Master Laboratory							Second Laboratory (only for granting and repetition)						
		Sample 1		Sam	ple 2	Sam	Sample 3		ple 1	Sam	ple 2	Sam	ple 3		
5.3.1	3.1 Resistance to humid atmospheres containing		μm		μm		μm		μm		μm		μm		
	sulphur dioxide (ISO 22479)		mm		mm		mm		mm		mm		mm		
	No infiltration exceeding 1 mm on both	Results satisfactory according to QUALICOAT-Specifications													
	sides of the scratch, and no change in colour or blistering in excess of 2 (S2)		Yes		Yes		Yes		Yes		Yes		Yes		
			No		No		No		No		No		No		
5.3.2	Acetic acid salt spray (ISO 9227)		μm		μm		μm		μm		μm		μm		
	Section 2.10 of Specifications	Length of filaments													
	Length of filaments: max 4 mm Infiltration: max 16 mm2/10 cm		mm		mm		mm		mm		mm		mm		
	No blistering in excess of 2 (S2)	Infiltration [mm²/10				0 cm]	•								
			F	Results	satisfac	ctory ac	cording	to QU	ALICO	AT-Spe	cificatio	ns			
			Yes		Yes		Yes		Yes		Yes		Yes		
			No		No		No		No		No		No		
5.3.3	Constant climate condensation		μm		μm		μm		μm		μm		μm		
	(ISO 6270-2)		mm		mm		mm		mm		mm		mm		
	No infiltration exceeding 1 mm on both sides of the scratch, and no change in colour or blistering in excess of 2 (S2)		F	Results	satisfac	ctory ac	cording	to QU	ALICO	AT-Spe	cificatio	ns			
	Table 1. Wholeshing in choose of E (OE)		Yes		Yes		Yes		Yes		Yes		Yes		
			No		No		No		No		No		No		





						Re	epor	t no.					
5.3.4	Wet adhesion test (QUALICOAT)		μm		μm		μm		μm		μm		μm
	Slight colour change permissible		Results satisfactory according to QUALICOAT-Specifications										
	No blistering in excess of 2 (S2)		Yes		Yes		Yes		Yes		Yes		Yes
			No		No		No		No		No		No
5.3.5	Filiform corrosion (ISO 4623-2)		μm		μm		μm		μm		μm		μm
	L (longest filament) ≤ 4 mm M (average length of filaments) ≤ 2	Longest Filament (L)											
	m (average length of filaments) ≤ 2 mm		mm		mm		mm		mm		mm		mm
					A	verage	Length	n of Fila	ments ((M)			
			mm		mm		mm		mm		mm		mm
		Results satisfactory according to QUALICOAT-Specifications											
			Yes		Yes		Yes		Yes		Yes		Yes
			No		No		No		No		No		No

6.3 CLASS 3: POWDER or LIQUID COATING

Remarks

		☐ Class 3 / ☐ Liquid Coating: RAL											
	ified minimum thickness:		Ma	ster La	aborat	ory		Second Laboratory (only for granting and repetition)					
60 μm		Sam	ple 1	Sam	ple 2	Sam	Sample 3		ple 1	Sam	ple 2	Sam	ple 3
6.3.1	1 Resistance to humid atmospheres containing sulphur dioxide (ISO 22479)		μm		μm		μm		μm		μm		μm
			mm		mm		mm		mm		mm		mm
	No infiltration exceeding 1 mm on both		R	esults	satisfac	tory ac	cording	to QUA	ALICOA	T-Spe	cification	าร	
	sides of the scratch, and no change in colour or blistering in excess of 2 (S2)		Yes No		Yes No		Yes No		Yes No		Yes No		Yes No
6.3.2	Acetic acid salt spray (ISO 9227)		μm]	μm]	μm		μm		μm		μm
	Section 2.10 of Specifications	Length of filaments											
	Length of filaments: max 4 mm Infiltration: max 16 mm2/10 cm		mm		mm		mm		mm		mm		mm
	No blistering in excess of 2 (S2)	Infiltration [mm²/10 cm]											
			R	esults	satisfac	tory ac	cording	to QU	ALICOA	AT-Spe	cificatio	ns	
] [Yes		Yes		Yes		Yes		Yes		Yes
000	Operation to Property		No	Ш	No		No		No	Ш	No		No
6.3.3	Constant climate condensation		μm		μm		μm		μm		μm		μm
	(ISO 6270-2)		mm		mm		mm		mm		mm		mm
	No infiltration exceeding 1 mm on both sides of the scratch, and no change in colour or blistering in excess of 2 (S2)		R	esults	satisfac	tory ac	cording	to QU	ALICOA	AT-Spe	cificatio	ns	
	colour or bilatoring in oxocos of 2 (O2)		Yes		Yes		Yes		Yes		Yes		Yes
			No		No		No		No		No		No

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6.3.4	Wet adhesion test (QUALICOAT)		μm		μm		μm		μm		μm		μm
	Slight colour change permissible		F	Results	satisfac	tory ac	cording	to QU	ALICO	AT-Spe	cificatio	ns	
	No detachment No blistering in excess of 2 (S2)]	Yes		Yes		Yes		Yes		Yes		Yes
6.3.5	Filiform corrosion		No μm		No µm		No μm		No μm		No µm		No µm
	(ISO 4623-2) L (longest filament) ≤ 4 mm	Longest Filament (L)											
	M (average length of filaments) ≤ 2 mm		mm		mm		mm		mm		mm		mm
		Average Length of Filaments (M)											
			mm		mm		mm		mm		mm		mm
			F	Results	satisfac	tory ac	cording	to QU	ALICO	AT-Spe	cificatio	ns	
			Yes No		Yes No		Yes No		Yes No		Yes No		Yes No
CoCo	THE FOLLOWING ENCLO onversion coating's SDS onversion coating's TDS	Yes Yes Yes	8	No No No)								
Elec	Testing Laboratory's etronic or Physical Signature	e		R	emark	s:							
Date):												
Ele	General Licensee's ctronic or Physical Signatur	е		R	emark	s:							
Date	:												

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