Update of QUALICOAT Specifications 2021
Update Sheet No. 11

applicable from 1 January 2022

Subject:	**New RAL colours and amended list of class 2 critical colours**
Proposals/Requests:	**Powders WG** a) Introduction of RAL 9012 as a colour of the family 9/A for class 2 with a Delta E value of 1.0 before granting and 2.0 after Florida test (*Ref. Powders WG – 31.08.21 – Item 2*) b) Update in Class 2 Critical Colours List (Ref. Powders WG – 09.02.21 – Item 4) c) RAL 8023 included in Appendix A12
QUALICOAT Resolution:	**Resolution No. 4/ TC 2021-11-18** The TC approved the following update sheets proposed by the Powders WG, to become effective on 1 January 2022: – SPEC 2021-US10 – Clarification of procedures in Chapter 4 – SPEC 2021-US11 - New RAL colours and amended list of Class 2 critical colours
Amendment to the Specifications:	• Appendix A8 – List of colour tolerances before granting or renewing an approval (for QUALICOAT laboratories) • Appendix A11 –Critical colours and classification of RAL families for class 2 • Appendix A12 - Colour tolerances after the weathering test for Class 1, 1.5 and 2 organic coatings

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A8 – List of colour tolerances before granting or renewing an approval (for QUALICOAT laboratories) [22]

RAL	Tolerance	RAL	Tolerance	RAL	Tolerance	RAL	Tolerance	RAL	Tolerance	RAL	Tolerance
1000	2.0	**3000**	2.8	**5000**	2.0	**6000**	2.0	**7000**	2.0	**8000**	2.0
1001	2.0	**3001**	2.8	**5001**	2.0	**6001**	2.8	**7001**	2.0	**8001**	2.0
1002	2.0	**3002**	2.8	**5002**	2.0	**6002**	2.8	**7002**	1.4	**8002**	2.0
1003	3.6	**3003**	2.8	**5003**	2.0	**6003**	2.0	**7003**	1.4	**8003**	2.0
1004	3.6	**3004**	2.0	**5004**	2.0	**6004**	2.0	**7004**	1.0	**8004**	2.0
1005	3.6	**3005**	2.0	**5005**	2.0	**6005**	2.0	**7005**	1.4	**8007**	2.0
1006	3.6	**3007**	1.4	**5007**	2.0	**6006**	1.4	**7006**	1.4	**8008**	2.0
1007	3.6	**3009**	2.0	**5008**	2.0	**6007**	1.4	**7008**	2.0	**8011**	2.0
1011	2.0	**3011**	2.8	**5009**	2.0	**6008**	1.4	**7009**	1.4	**8012**	2.0
1012	2.8	**3012**	2.0	**5010**	2.0	**6009**	1.4	**7010**	1.4	**8014**	1.4
1013	1.0	**3013**	2.8	**5011**	2.0	**6010**	2.8	**7011**	1.4	**8015**	2.0
1014	2.0	**3014**	2.0	**5012**	2.0	**6011**	2.0	**7012**	1.4	**8016**	1.4
1015	1.0	**3015**	1.0	**5013**	2.0	**6012**	1.4	**7013**	1.4	**8017**	1.4
1016	2.8	**3016**	2.8	**5014**	2.0	**6013**	2.0	**7015**	1.4	**8019**	1.4
1017	2.8	**3017**	2.8	**5015**	2.0	**6014**	1.4	**7016**	2.0	**8022**	1.4
1018	2.8	**3018**	2.8	**5017**	2.0	**6015**	1.4	**7021**	1.4	**8023**	2.8
1019	1.0	**3020**	2.8	**5018**	2.0	**6016**	2.0	**7022**	1.4	**8024**	2.8
1020	2.0	**3022**	2.8	**5019**	2.0	**6017**	2.8	**7023**	1.4	**8025**	1.4
1021	3.6	**3027**	2.8	**5020**	2.0	**6018**	2.8	**7024**	1.4	**8028**	1.4
1023	3.6	**3028**	2.8	**5021**	2.0	**6019**	1.2	**7026**	2.0	**9001**	1.0
1024	2.0	**3031**	2.8	**5022**	2.0	**6020**	1.4	**7030**	1.0	**9002**	1.0
1027	2.8	**4001**	1.4	**5023**	2.0	**6021**	2.0	**7031**	2.0	**9003**	1.0
1028	3.6	**4002**	2.0	**5024**	2.0	**6022**	1.4	**7032**	1.0	**9004**	1.4
1032	3.6	**4003**	1.4			**6024**	2.8	**7033**	1.4	**9005**	1.4
1033	3.6	**4004**	2.0			**6025**	2.8	**7034**	1.4	**9010**	1.0
1034	2.8	**4005**	2.0			**6026**	2.0	**7035**	1.0	**9011**	1.4
1037	3.6	**4006**	1.4			**6027**	2.0	**7036**	1.0	**9012**	1.0
2000	3.6	**4007**	1.4			**6028**	2.0	**7037**	1.4	**9016**	1.0
2001	2.8	**4008**	1.4			**6029**	2.0	**7038**	1.0	**9017**	1.4
2002	2.8	**4009**	1.2			**6032**	2.8	**7039**	1.4	**9018**	1.0
2003	2.8	**4010**	2.0			**6033**	2.0	**7040**	1.0		
2004	3.6					**6034**	2.0	**7042**	1.0		
2008	3.6					**6037**	2.8	**7043**	1.4		
2009	3.6							**7044**	1.0		
2010	2.8							**7045**	1.0		
2011	3.6							**7046**	1.4		
2012	2.8							**7047**	1.0		

[22] The powder manufacturers shall indicate which RAL card they use on the label, so that the laboratory knows which reference to work with. QUALICOAT recommends using the RAL GL Card for categories 2 and 3 solid powder coatings and RAL HR for category 1 and for textured coatings.

The tolerance indicated in the table may be extended with a corrective factor of 1.3 for matt and textured finishes in combination with a final visual assessment.

A11 – RAL families and critical colours

1. Introduction

QUALICOAT has introduced the concept of RAL families for class 2 and class 3 organic coatings in the specifications for colour change after the natural weathering test (see § 4.2.1) because if a manufacturer's coating material shows a colour change failure in one RAL colour after Florida exposure, this indicates a technological deficiency affecting similar colours.

2. Critical colours and classification of RAL families for class 2

30 groups of homogeneous colours (solid colours of a similar hue and shade) have been defined as RAL families for renewals of class 2 approvals. QUALICOAT has excluded ~~12~~ 9 critical RAL colours which, as powder coating technology stands today, do not have sufficient resistance to colour change after 3 years of outdoor exposure.

SUMMARY	
Number of solid RAL colours (excluding metallic and pearl RAL colours)	~~190~~ 191
Solid RAL colours (non-critical)	~~178~~ 182
Critical solid RAL colours	~~12~~ 9
Number of RAL families	30

~~12~~ 9 CRITICAL RAL COLOURS (colours excluded from the RAL families)			
RAL 1003	RAL 2004	RAL 3015	RAL 4001
~~RAL 1012~~	RAL 2011	RAL 3017	
~~RAL 1018~~		RAL 3018	
RAL 1028		~~RAL 3020~~	
RAL 1033			

~~178~~ 182 SOLID RAL COLOURS (non-critical)
30 RAL FAMILIES

RAL 1XXX	FAMILY 1/A	FAMILY 1/B	FAMILY 1/C	FAMILY 1/D
DESCRIPTION	IVORY AND BEIGE	GREENISH YELLOW	REDDISH YELLOW	OCHRE / DARK YELLOW
RAL	1000 - 1001 - 1002 - 1013 -1014 - 1015	1012 -1016 – 1018 – 1021 - 1023	1004 -1005 - 1006 - 1007 - 1017 - 1032 - 1034 - 1037	1011 - 1019 - 1020 -1024 - 1027
Total ~~22~~ 24 colours	6	~~3~~ 5	8	5

RAL 2XXX	FAMILY 2/A	FAMILY 2/B
DESCRIPTION	YELLOWISH ORANGE	REDDISH ORANGE
RAL	2000 - 2003 - 2008 - 2009 - 2010	2001 - 2002 - 2012
Total 8 colours	5	3

RAL 3XXX	FAMILY 3/A	FAMILY 3/B	FAMILY 3/C
DESCRIPTION	LIGHT RED AND PINK	RED	DARK RED
RAL	3012 - 3014 - 3022	3000 - 3001 - 3002 - 3003 - 3013 - 3016 - 3020 - 3027 - 3028 - 3031	3004 - 3005 - 3007 - 3009 - 3011
Total ~~17~~ 18 colours	3	~~9~~ 10	5

RAL 4XXX	FAMILY 4/A	FAMILY 4/B	FAMILY 4/C
DESCRIPTION	REDDISH VIOLET	BLUEISH VIOLET	DARK AND PASTEL VIOLET
RAL	4002 - 4003 - 4010	4004 - 4005 - 4006 - 4008	4007 - 4009
Total 9 colours	3	4	2

RAL 5XXX	FAMILY 5/A	FAMILY 5/B	FAMILY 5/C	FAMILY 5/D
DESCRIPTION	REDDISH BLUE	GREENISH BLUE	DARK BLUE	LIGHT BLUE
RAL	5000 - 5002 - 5003 - 5005 - 5010 - 5013 - 5017 - 5022	5001- 5007 - 5009 - 5018 - 5019 - 5021	5004 - 5008 - 5011 - 5020	5012 - 5014 - 5015 - 5023 - 5024
Total 23 colours	8	6	4	5

RAL 6XXX	FAMILY 6/A	FAMILY 6/B	FAMILY 6/C	FAMILY 6/D	FAMILY 6/E
DESCRIPTION	BLUISH GREEN	YELLOWISH GREEN	INORGANIC GREEN	DARK GREEN	LIGHT GREEN
RAL	6000 - 6004 - 6005 - 6009 - 6016 - 6026	6001 - 6002 - 6006 - 6010 - 6017 - 6018 - 6024 - 6029 - 6032 - 6033 - 6037	6003 -6011 - 6013 - 6014 - 6025 - 6028	6007 - 6008 - 6012 - 6015 - 6020 - 6022	6019 - 6021 - 6027 - 6034
Total 33 colours	6	11	6	6	4

RAL 7XXX	FAMILY 7/A	FAMILY 7/B	FAMILY 7/C
DESCRIPTION	LIGHT GREY WITH L > 70	MEDIUM GREY WITH L < 70 AND > 50	DARK GREY WITH L < 50
RAL	7032 - 7035 - 7038 - 7044 - 7047	7000 - 7001 - 7002 - 7003 - 7004 - 7005 - 7023 - 7030 - 7033 - 7034 - 7036 - 7037 - 7040 - 7042 - 7045 - 7046	7006 - 7008 - 7009 - 7010 - 7011 - 7012 - 7013 - 7015 - 7016 - 7021 - 7022 - 7024 - 7026 - 7031 - 7039 - 7043
Total 37 colours	5	16	16

RAL 8XXX	FAMILY 8/A	FAMILY 8/B	FAMILY 8/C
DESCRIPTION	LIGHT BROWN	MEDIUM BROWN	DARK BROWN
RAL	8000 - 8001 -8004- 8023 - 8024 -8025	8002 - 8003 - 8007 -8008 - 8012 - 8015	8011- 8014 - 8016 - 8017 - 8019 - 8022 - 8028
Total 19 colours	6	6	7

RAL 9XXX	FAMILY 9/A	FAMILY 9/B	FAMILY 9/C
DESCRIPTION	WHITE	CREAM AND GREY WHITE	BLACK
RAL	9003 -9010 – 9012 - 9016	9001- 9002 - 9018	9004 - 9005 - 9011- 9017
Total ~~10~~ 11 colours	~~3~~ 4	3	4

A12 – Lists of colour tolerances after weathering tests for granting or renewing an approval (for QUALICOAT laboratories)

Colour tolerances after the weathering test for Class 1 & 1.5 organic coatings[1]

RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E
1000	3.0	2000	4.0	**3000**	5.0	4001	4.0	5000	4.0	6000	4.0	7000	3.0	8000	3.0	**9001**	2.0
1001	3.0	**2001**	5.0	3001	5.0	4002	4.0	5001	4.0	6001	4.0	**7001**	3.0	**8001**	3.0	**9002**	2.0
1002	3.0	2002	6.0	**3002**	5.0	**4003**	5.0	**5002**	4.0	**6002**	4.0	7002	3.0	8003	3.0	**9003**	2.0
1003	4.0	2003	6.0	**3003**	4.0	4004	4.0	**5003**	4.0	**6003**	4.0	7003	3.0	8004	3.0	**9004**	4.0
1004	4.0	**2004**	4.0	3004	4.0	**4005**	4.0	5004	4.0	6004	4.0	**7004**	3.0	**8007**	3.0	**9005**	4.0
1005	5.0	2008	6.0	**3005**	4.0	4006	4.0	**5005**	4.0	**6005**	3.0	7005	3.0	**8008**	3.0	**9006**	2.0
1006	5.0	**2009**	4.0	3007	4.0	4007	4.0	**5007**	3.0	6006	4.0	7006	3.0	**8011**	3.0	**9007**	2.0
1007	5.0	2010	6.0	**3009**	4.0	4008	4.0	**5008**	4.0	6007	3.0	7008	3.0	**8012**	3.0	**9010**	2.0
1011	3.0	2011	6.0	**3011**	4.0	4009	4.0	5009	4.0	6008	3.0	7009	3.0	**8014**	3.0	**9011**	4.0
1012	3.0	2012	4.0	**3012**	2.0	4010	4.0	**5010**	4.0	**6009**	4.0	7010	3.0	8015	3.0	9012	2.0
1013	2.0			3013	5.0			**5011**	4.0	**6010**	4.0	7011	3.0	8016	3.0	**9016**	2.0
1014	3.0			3014	4.0			5012	4.0	**6011**	4.0	**7012**	3.0	**8017**	3.0	9018	2.0
1015	2.0			3015	4.0			5013	4.0	**6012**	3.0	7013	3.0	**8019**	3.0	9022	2.0
1016	6.0			**3016**	5.0			**5014**	4.0	**6013**	3.0	**7015**	3.0	8022	3.0		
1017	3.0			3017	8.0			**5015**	3.0	**6014**	4.0	**7016**	3.0	**8023**	3.0		
1018	6.0			**3018**	6.0			**5017**	4.0	6015	3.0	**7021**	3.0	8024	3.0		
1019	3.0			**3020**	4.0			5018	4.0	**6016**	4.0	**7022**	3.0	8025	3.0		
1020	3.0			**3022**	4.0			5019	4.0	**6017**	4.0	7023	3.0	**8028**	3.0		
1021	6.0			3027	5.0			5020	4.0	**6018**	4.0	**7024**	3.0				
1023	6.0			3031	4.0			5021	4.0	6019	2.0	7026	3.0				
1024	3.0							5022	4.0	**6020**	3.0	**7030**	3.0				
1027	3.0							**5023**	4.0	**6021**	2.0	7031	3.0				
1028	8.0							5024	4.0	6022	3.0	**7032**	2.0				
1032	5.0									**6024**	3.0	7033	3.0				
1033	8.0									6025	4.0	7034	3.0				
1034	4.0									**6026**	4.0	**7035**	2.0				
1037	5.0									6027	2.0	7036	3.0				
										6028	4.0	**7037**	3.0				
										6029	4.0	**7038**	2.0				
										6032	3.0	**7039**	3.0				
										6033	3.0	**7040**	3.0				
										6034	2.0	**7042**	3.0				
												7043	3.0				
												7044	2.0				
												7045	3.0				
												7046	3.0				
												7047	2.0				

[1] Underlined colours are colours that have already been tested.

Colour tolerances after the weathering test for Class 2 organic coatings[2]

RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E	RAL	Δ E
1000	3.0	2000	6.0	3000	6.0	4002	4.0	5000	4.0	6000	5.0	7000	4.0	8000	4.0	9001	2.0
1001	3.0	2001	5.0	3001	6.0	4003	5.0	5001	4.0	6001	5.0	7001	3.0	8001	3.0	9002	2.0
1002	3.0	2002	8.0	3002	6.0	4004	5.0	5002	4.0	6002	4.0	7002	4.0	8003	3.0	9003	2.0
1004	4.0	2003	6.0	3003	4.0	4005	4.0	5003	4.0	6003	5.0	7003	4.0	8004	4.0	9004	5.0
1005	6.0	2008	6.0	3004	4.0	4006	5.0	5004	5.0	6004	5.0	7004	4.0	8007	4.0	9005	5.0
1006	6.0	2009	4.0	3005	4.0	4007	5.0	5005	4.0	6005	3.0	7005	4.0	8008	4.0	9006	2.0
1007	6.0	2010	6.0	3007	4.0	4008	4.0	5007	3.0	6006	4.0	7006	4.0	8011	4.0	9007	2.0
1011	3.0	2012	4.0	3009	4.0	4009	4.0	5008	5.0	6007	4.0	7008	4.0	8012	4.0	9010	2.0
1012	3.0			3011	5.0	4010	5.0	5009	4.0	6008	5.0	7009	4.0	8014	3.0	9011	5.0
1013	2.0			3012	2.0			5010	4.0	6009	4.0	7010	4.0	8015	4.0	9012	2.0
1014	3.0			3013	6.0			5011	5.0	6010	5.0	7011	4.0	8016	4.0	9016	2.0
1015	2.0			3014	4.0			5012	4.0	6011	4.0	7012	4.0	8017	4.0	9018	2.0
1016	6.0			3016	5.0			5013	5.0	6012	4.0	7013	4.0	8019	3.0	9022	2.0
1017	3.0			3020	4.0			5014	4.0	6013	3.0	7015	4.0	8022	5.0		
1018	6.0			3022	4.0			5015	3.0	6014	4.0	7016	3.0	8023	4.0		
1019	2.5			3027	6.0			5017	5.0	6015	4.0	7021	4.0	8024	4.0		
1020	6.0			3031	4.0			5018	5.0	6016	5.0	7022	4.0	8025	4.0		
1021	6.0							5019	4.0	6017	5.0	7023	3.0	8028	3.0		
1023	3.0							5020	5.0	6018	4.0	7024	4.0				
1024	3.0							5021	4.0	6019	2.0	7026	4.0				
1027	3.0							5022	5.0	6020	2.0	7030	2.0				
1032	6.0							5023	4.0	6021	4.0	7031	4.0				
1034	4.0							5024	4.0	6022	4.0	7032	2.0				
1037	6.0									6024	3.0	7033	3.0				
										6025	5.0	7034	3.0				
										6026	5.0	7035	2.0				
										6027	2.0	7036	3.0				
										6028	5.0	7037	2.5				
										6029	4.0	7038	2.0				
										6032	3.0	7039	4.0				
										6033	2.0	7040	3.0				
										6034	2.0	7042	3.0				
												7043	3.0				
												7044	2.0				
												7045	3.0				
												7046	4.0				
												7047	2.0				

[2] Underlined colours are colours that have already been tested.