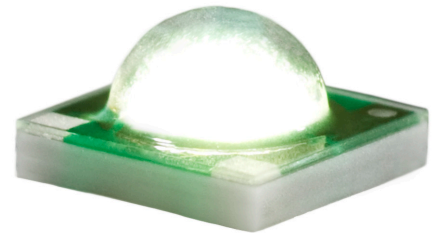


Cree® XLamp® XP-E and XP-C LED Binning and Labeling

Introduction

This document describes the product nomenclature required to select and order Cree’s XLamp XP-E and XP-C LEDs. XLamp XP-E and XP-C LEDs are tested and sorted into bins which are then combined into orderable kits identified by an order code.



All XLamp LEDs are tested and sorted by color and brightness into a unique bin. Each bin contains LEDs from only one color and brightness group and is uniquely identified by a bin code. White XLamp LEDs are sorted by chromaticity (color) and luminous flux (brightness). LEDs are shipped on reels containing LEDs from one bin and are always labeled with the appropriate bin code.

Kits contain LEDs from a number of similar bins and are fully defined by their order codes. A full explanation of the order codes for XLamp XP-E and XP-C LEDs, as well as a list of standard order codes, is provided in this document.

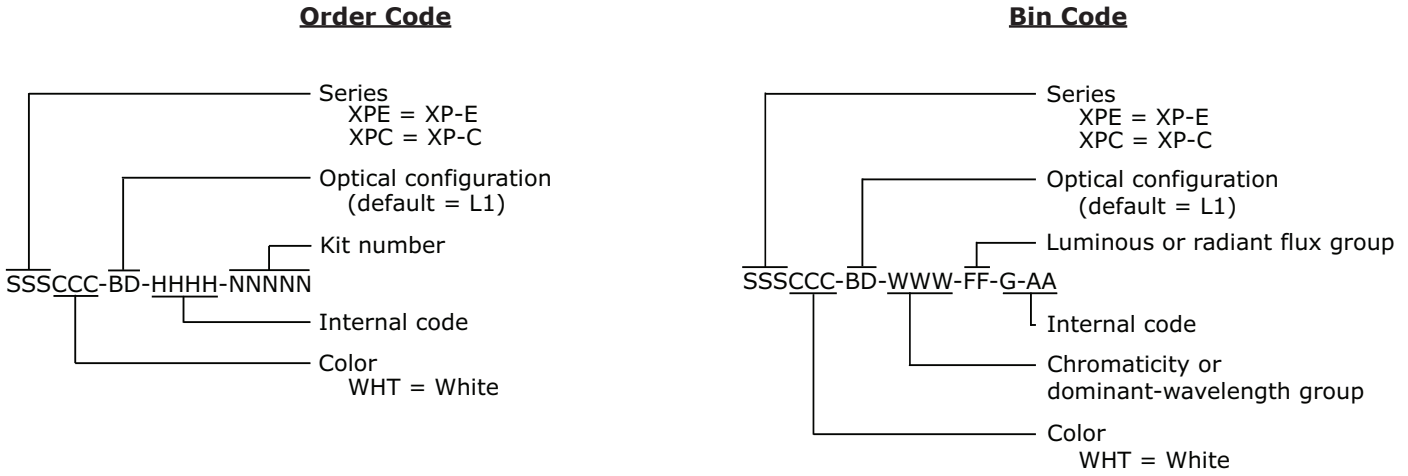
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Application Note: CLD-AP22.003

Bin and Order-Code Format

Bin codes and order codes are configured in the following manner:



Performance Groups – Brightness

White XLamp LEDs are tested for luminous flux and placed into one of the following luminous-flux groups:

Group Code	Min. Luminous Flux @ 350 mA (lm)	Max. Luminous Flux @ 350 mA (lm)
M2	39.8	45.7
M3	45.7	51.7
N2	51.7	56.8
N3	56.8	62.0
N4	62.0	67.2
P2	67.2	73.9
P3	73.9	80.6
P4	80.6	87.4
Q2	87.4	93.9
Q3	93.9	100
Q4	100	107
Q5	107	114
R2	114	122
R3	122	130



Performance Groups – Chromaticity

White XLamp LEDs are tested for chromaticity and placed into one of the regions defined by the bounding coordinates below.

White Chromaticity Region Bounding Coordinates

Region	x	y	Region	x	y
WK	.283	.284	WF	.314	.355
	.295	.297		.316	.332
	.298	.288		.306	.322
	.287	.276		.301	.342
WA	.292	.306	WP	.317	.319
	.295	.297		.329	.330
	.283	.284		.329	.318
	.279	.291		.318	.308
WM	.295	.297	WD	.329	.345
	.308	.311		.329	.330
	.310	.300		.317	.319
	.298	.288		.316	.332
WB	.306	.322	WG	.329	.369
	.308	.311		.329	.345
	.295	.297		.316	.332
	.292	.306		.314	.355
WE	.301	.342	WJ	.329	.330
	.306	.322		.329	.345
	.292	.306		.346	.359
	.287	.321		.344	.342
WN	.308	.311	WH	.348	.384
	.317	.319		.346	.359
	.318	.308		.329	.345
	.310	.300		.329	.369
WC	.316	.332			
	.317	.319			
	.308	.311			
	.306	.322			

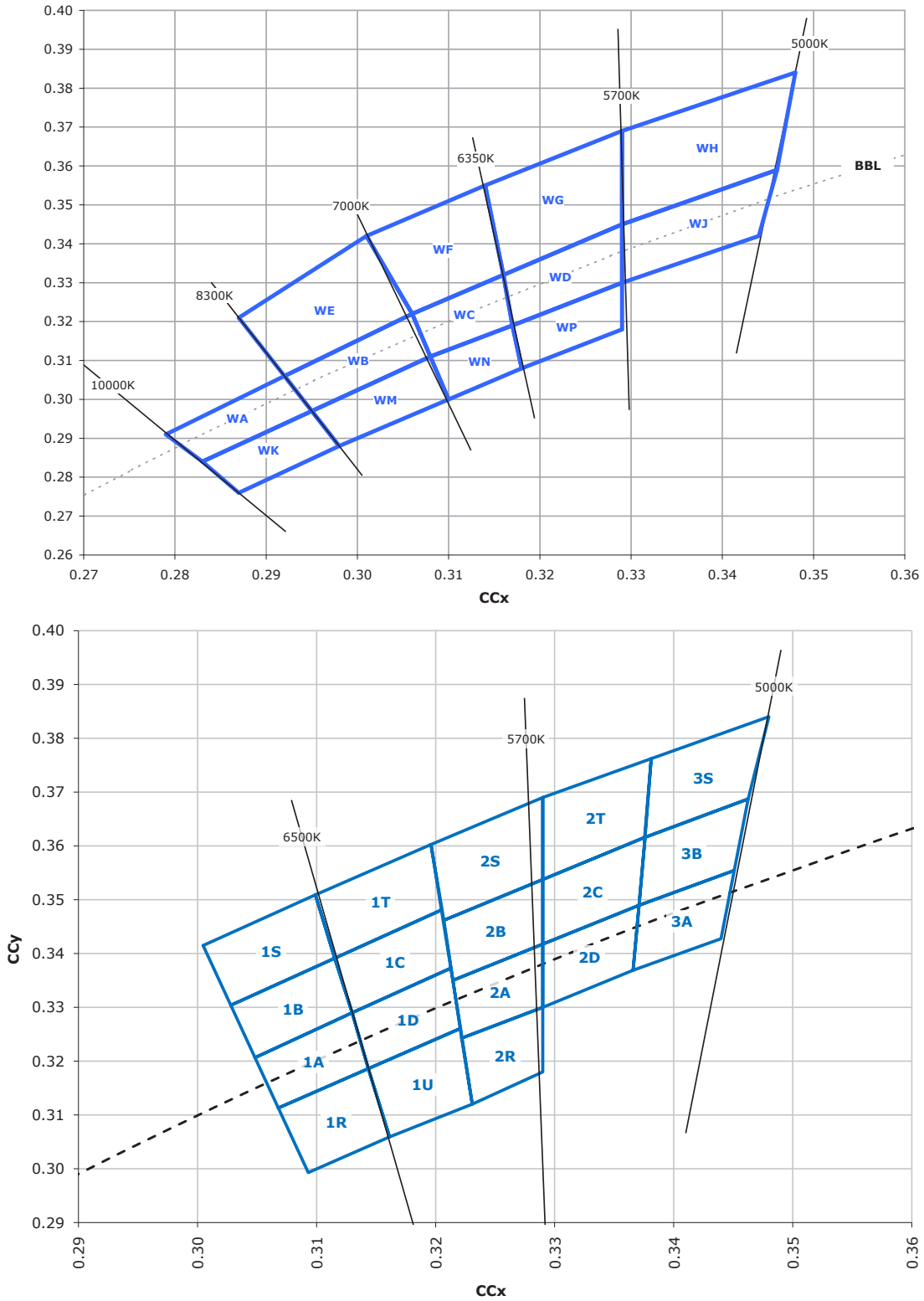


Performance Groups – Chromaticity (continued)

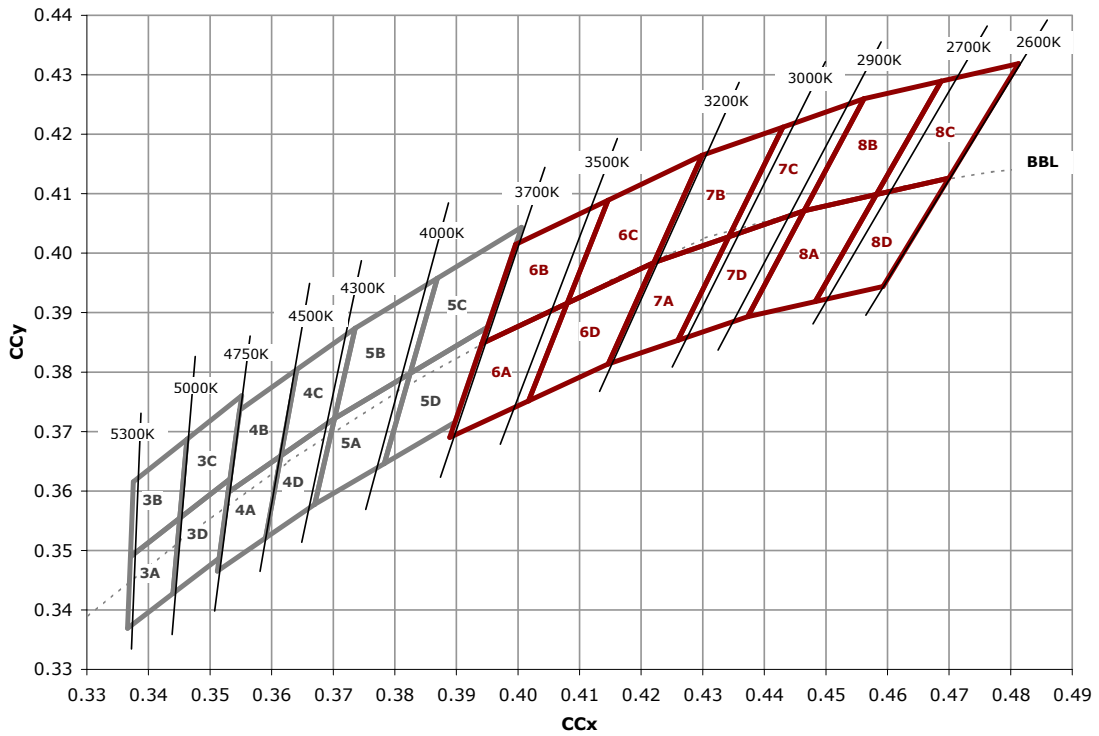
Region	x	y	Region	x	y	Region	x	y	Region	x	y
1A	.3048	.3207	1B	.3028	.3304	1C	.3115	.3391	1D	.3130	.3290
	.3130	.3290		.3115	.3391		.3205	.3481		.3213	.3373
	.3143	.3186		.3130	.3290		.3213	.3373		.3221	.3261
	.3068	.3113		.3048	.3207		.3130	.3290		.3144	.3186
2A	.3215	.3350	2B	.3207	.3462	2C	.3290	.3538	2D	.3290	.3417
	.3290	.3417		.3290	.3538		.3376	.3616		.3371	.3490
	.3290	.3300		.3290	.3417		.3371	.3490		.3366	.3369
	.3222	.3243		.3214	.3350		.3290	.3417		.3290	.3300
3A	.3371	.3490	3B	.3376	.3616	3C	.3463	.3687	3D	.3451	.3554
	.3451	.3554		.3463	.3687		.3551	.3760		.3533	.3620
	.3440	.3428		.3451	.3554		.3533	.3620		.3515	.3487
	.3366	.3369		.3371	.3490		.3451	.3554		.3440	.3428
4A	.3512	.3465	4B	.3529	.3597	4C	.3615	.3659	4D	.3590	.3521
	.3529	.3597		.3548	.3736		.3641	.3804		.3615	.3659
	.3615	.3659		.3641	.3804		.3736	.3874		.3702	.3722
	.3590	.3521		.3615	.3659		.3702	.3722		.3670	.3578
5A	.3670	.3578	5B	.3702	.3722	5C	.3825	.3798	5D	.3783	.3646
	.3702	.3722		.3736	.3874		.3869	.3958		.3825	.3798
	.3825	.3798		.3869	.3958		.4006	.4044		.3950	.3875
	.3783	.3646		.3825	.3798		.3950	.3875		.3898	.3716
6A	.3889	.3690	6B	.3941	.3848	6C	.4080	.3916	6D	.4017	.3751
	.3941	.3848		.3996	.4015		.4146	.4089		.4080	.3916
	.4080	.3916		.4146	.4089		.4299	.4165		.4221	.3984
	.4017	.3751		.4080	.3916		.4221	.3984		.4147	.3814
7A	.4147	.3814	7B	.4221	.3984	7C	.4342	.4028	7D	.4259	.3853
	.4221	.3984		.4299	.4165		.4430	.4212		.4342	.4028
	.4342	.4028		.4430	.4212		.4562	.4260		.4465	.4071
	.4259	.3853		.4342	.4028		.4465	.4071		.4373	.3893
8A	.4373	.3893	8B	.4465	.4071	8C	.4582	.4099	8D	.4483	.3919
	.4465	.4071		.4562	.4260		.4687	.4289		.4582	.4099
	.4582	.4099		.4687	.4289		.4813	.4319		.4700	.4126
	.4483	.3919		.4582	.4099		.4700	.4126		.4593	.3944
1R	.3068	.3113	1S	.3005	.3415	1T	.3099	.3509	1U	.3144	.3186
	.3144	.3186		.3099	.3509		.3196	.3602		.3221	.3261
	.3161	.3059		.3115	.3391		.3205	.3481		.3231	.3120
	.3093	.2993		.3028	.3304		.3115	.3391		.3161	.3059
2R	.3222	.3243	2S	.3196	.3602	2T	.3290	.3690	3S	.3381	.3762
	.3290	.3300		.3290	.3690		.3381	.3762		.3480	.3840
	.3290	.3180		.3290	.3538		.3376	.3616		.3463	.3687
	.3231	.3120		.3207	.3462		.3290	.3537		.3376	.3616



Cree's Standard Chromaticity Regions Plotted on the 1931 CIE Curve



Cree's Standard Chromaticity Regions Plotted on the 1931 CIE Curve (continued)





Standard Order Codes and Bins (XP-C Cool White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp XP-C LED Standard Order Codes - White			
Min. Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number
Group	Flux (lm)		
Cool White (5000 K - 10,000 K)			
P3	73.9	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00801
		WC, WD, WF, WG	00802
		WC, WD, WF, WG, WH, WJ, WN, WP	00803
P4	80.6	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00901
		WC, WD, WF, WG	00902
		WC, WD, WF, WG, WH, WJ, WN, WP	00903
Q2	87.4	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00A01
		WC, WD, WF, WG	00A02
		WC, WD, WF, WG, WH, WJ, WN, WP	00A03
Q3	93.9	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00B01
		WC, WD, WF, WG	00B02
		WC, WD, WF, WG, WH, WJ, WN, WP	00B03

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.

Standard Order Codes and Bins (XP-C ANSI Cool White)

XLamp XP-C LED Standard Order Codes - White			
Min. Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number
Group	Flux (lm)		
Cool White (5000 K - 10,000 K)			
P3	73.9	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00850
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00853
P4	80.6	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00950
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00953
Q2	87.4	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00A50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00A53
Q3	93.9	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00B50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00B53



Standard Order Codes and Bins (XP-C Neutral White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp XP-C LED Standard Order Codes - White				
Min Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number	CCT
Group	Flux (lm)			
Neutral White (3700 K – 5000 K)				
N4	62.0	4C, 4D, 5A, 5B	006F5	4300 K
		5A, 5B, 5C, 5D	006E5	4000 K
		5C, 5D, 6A, 6B	006F6	3700 K
P2	67.2	3A, 3B, 3C, 3D	007E3	5000 K
		3C, 3D, 4A, 4B	007F4	4750 K
		4A, 4B, 4C, 4D	007E4	4500 K
		4C, 4D, 5A, 5B	007F5	4300 K
		5A, 5B, 5C, 5D	007E5	4000 K
P3	73.9	5C, 5D, 6A, 6B	007F6	3700 K
		3A, 3B, 3C, 3D	008E3	5000 K
		3C, 3D, 4A, 4B	008F4	4750 K
		4A, 4B, 4C, 4D	008E4	4500 K
		4C, 4D, 5A, 5B	008F5	4300 K
P4	80.6	5A, 5B, 5C, 5D	008E5	4000 K
		5C, 5D, 6A, 6B	008F6	3700 K
		3A, 3B, 3C, 3D	009E3	5000 K
		3C, 3D, 4A, 4B	009F4	4750 K
		4A, 4B, 4C, 4D	009E4	4500 K
		4C, 4D, 5A, 5B	009F5	4300 K
		5A, 5B, 5C, 5D	009E5	4000 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.



Standard Order Codes and Bins (XP-C Warm White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp XP-C LED Standard Order Codes - White				
Min Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number	CCT
Group	Flux (lm)			
Warm White (2600 K – 3700 K)				
N2	51.7	8A, 8B, 8C, 8D	004E8	2700 K
N3	56.8	6C, 6D, 7A, 7B	005F7	3200 K
		7A, 7B, 7C, 7D	005E7	3000 K
		7C, 7D, 8A, 8B	005F8	2900 K
		8A, 8B, 8C, 8D	005E8	2700 K
N4	62.0	6A, 6B, 6C, 6D	006E6	3500 K
		6C, 6D, 7A, 7B	006F7	3200 K
		7A, 7B, 7C, 7D	006E7	3000 K
		7C, 7D, 8A, 8B	006F8	2900 K
P2	67.2	6A, 6B, 6C, 6D	007E6	3500 K
		6C, 6D, 7A, 7B	007F7	3200 K
		7A, 7B, 7C, 7D	007E7	3000 K
		7C, 7D, 8A, 8B	007F8	2900 K
P3	73.9	6A, 6B, 6C, 6D	008E6	3500 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.



Standard Order Codes and Bins (XP-E Cool White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp XP-E LED Standard Order Codes - White			
Min. Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number
Group	Flux (lm)		
Cool White (5000 K – 10,000 K)			
Q2	87.4	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00A01
		WC, WD, WF, WG	00A02
		WC, WD, WF, WG, WH, WJ, WN, WP	00A03
Q3	93.9	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00B01
		WC, WD, WF, WG	00B02
		WC, WD, WF, WG, WH, WJ, WN, WP	00B03
Q4	100	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00C01
		WC, WD, WF, WG	00C02
		WC, WD, WF, WG, WH, WJ, WN, WP	00C03
Q5	107	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00D01
		WC, WD, WF, WG	00D02
		WC, WD, WF, WG, WH, WJ, WN, WP	00D03
R2	114	WA, WB, WC, WD, WE, WF, WG, WH, WJ, WK, WM, WN, WP	00E01
		WC, WD, WF, WG	00E02
		WC, WD, WF, WG, WH, WJ, WN, WP	00E03

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.



Standard Order Codes and Bins (XP-E ANSI Cool White)

XLamp XP-C LED Standard Order Codes - White			
Min. Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number
Group	Flux (lm)		
Cool White (5000 K – 10,000 K)			
Q2	87.4	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00A50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00A53
Q3	93.9	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00B50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00B53
Q4	100	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00C50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00C53
Q5	107	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00D50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00D53
R2	114	1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D	00E50
		1A, 1B, 1C, 1D, 1R, 1S, 1T, 1U, 2A, 2B, 2C, 2D, 2R, 2S, 2T, 3A, 3B, 3S	00E53

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.



Standard Order Codes and Bins (XP-E Neutral White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp XP-E LED Standard Order Codes - White				
Minimum Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number	CCT
Group	Flux (lm)			
Neutral White (3700 K - 5000 K)				
P3	73.9	4C, 4D, 5A, 5B	008F5	4300 K
		5A, 5B, 5C, 5D	008E5	4000 K
		5C, 5D, 6A, 6B	008F6	3700 K
P4	80.6	3A, 3B, 3C, 3D	009E3	5000 K
		3C, 3D, 4A, 4B	009F4	4750 K
		4A, 4B, 4C, 4D	009E4	4500 K
		4C, 4D, 5A, 5B	009F5	4300 K
		5A, 5B, 5C, 5D	009E5	4000 K
Q2	87.4	5C, 5D, 6A, 6B	009F6	3700 K
		3A, 3B, 3C, 3D	00AE3	5000 K
		3C, 3D, 4A, 4B	00AF4	4750 K
		4A, 4B, 4C, 4D	00AE4	4500 K
		4C, 4D, 5A, 5B	00AF5	4300 K
Q3	93.9	5A, 5B, 5C, 5D	00AE5	4000 K
		5C, 5D, 6A, 6B	00AF6	3700 K
		3A, 3B, 3C, 3D	00BE3	5000 K
		3C, 3D, 4A, 4B	00BF4	4750 K
		4A, 4B, 4C, 4D	00BE4	4500 K
Q4	100	4C, 4D, 5A, 5B	00BF5	4300 K
		5A, 5B, 5C, 5D	00BE5	4000 K
		5C, 5D, 6A, 6B	00BF6	3700 K
		3A, 3B, 3C, 3D	00CE3	5000 K
		3C, 3D, 4A, 4B	00CF4	4750 K
		4A, 4B, 4C, 4D	00CE4	4500 K
		4C, 4D, 5A, 5B	00CF5	4300 K
		5A, 5B, 5C, 5D	00CE5	4000 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.



Standard Order Codes and Bins (XP-E Warm White)

The following tables list standard kit numbers and performance bins. Kit numbers completely describe an order code's chromaticity regions and luminous flux range.

XLamp XP-E LED Standard Order Codes - White				
Minimum Luminous Flux (lm) @ 350 mA*		Chromaticity Regions	Kit Number	CCT
Group	Flux (lm)			
Warm White (2600 K - 3700 K)				
N4	62.0	8A, 8B, 8C, 8D	006E8	2700 K
P2	67.2	6A, 6B, 6C, 6D	007E6	3500 K
		6C, 6D, 7A, 7B	007F7	3200 K
		7A, 7B, 7C, 7D	007E7	3000 K
		7C, 7D, 8A, 8B	007F8	2900 K
		8A, 8B, 8C, 8D	007E8	2700 K
P3	73.9	6A, 6B, 6C, 6D	008E6	3500 K
		6C, 6D, 7A, 7B	008F7	3200 K
		7A, 7B, 7C, 7D	008E7	3000 K
		7C, 7D, 8A, 8B	008F8	2900 K
		8A, 8B, 8C, 8D	008E8	2700 K
P4	80.6	6A, 6B, 6C, 6D	009E6	3500 K
		6C, 6D, 7A, 7B	009F7	3200 K
		7A, 7B, 7C, 7D	009E7	3000 K
		7C, 7D, 8A, 8B	009F8	2900 K
		8A, 8B, 8C, 8D	009E8	2700 K
Q2	87.4	6A, 6B, 6C, 6D	00AE6	3500 K
		6C, 6D, 7A, 7B	00AF7	3200 K
		7A, 7B, 7C, 7D	00AE7	3000 K
Q3	93.9	6A, 6B, 6C, 6D	00BE6	3500 K

For other flux and chromaticity combinations, contact Cree or an authorized distributor.

* Cree XLamp XP-C & XP-E order codes specify only a minimum flux bin and not a maximum. Cree may ship reels in flux bins higher than the minimum specified by the order code without advance notice. Shipments will always adhere to the chromaticity or DWL bin restrictions specified by the order code.