



IALA RECOMMENDATION (NORMATIVE)

R0108 (E-108) THE SURFACE COLOURS USED AS VISUAL SIGNALS ON MARINE AIDS TO NAVIGATION

Edition 4.1

December 2017

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DOCUMENT REVISION

Revisions to this document are to be noted in the table prior to the issue of a revised document.

Date	Details	Approval
June 1998	1 st issue	Council 19
December 2005	Entire document: Reformatted to reflect IALA documentation hierarchy	Council 37
December 2009	Section 2: Additional information about the influence on measurement. New Section 10: Introduction of colour collections.	Council 46
May 2013	Section 2.5: Additional information about measurement devices Section 8: Some corrections Section 9: Updated references	Council 55
December 2017	Entire document: Alignment with IALA document strategy. Removal of details and descriptions. Transfer of descriptive content to new IALA Guideline G1134.	Council 65
September 2020	Ed4.1 Editorial corrections.	

THE COUNCIL

RECALLING:

- 1 The function of IALA with respect to Safety of Navigation, the efficiency of maritime transport and the protection of the environment.
- 2 Article 8 of the IALA Constitution regarding the authority, duties and functions of the Council.

RECOGNIZING

- 1 the need to provide guidance within which the colours and colour boundaries of surface colours used as visual signals on Marine Aids to Navigation should be determined; and
- 2 that such guidance should enable a common approach to be made world-wide, thus greatly assisting mariners, who, while passing through waters of different authorities, should not be confused by surface colours that are ambiguous;

NOTING this document only applies to Marine Aid-to-Navigation signals installed after the date of this publication;

ADOPTS the tables and charts in the annex of this Recommendation;

INVITES Members and Marine Aids to Navigation authorities worldwide to implement the provisions of the Recommendation;

RECOMMENDS

- that the colour model used throughout all specifications is the chromaticity chart according to the CIE 1931 standard colorimetry system (2°-observer);
- that the standard illuminant for measurement is D₆₅ (6500 K);
- that the measurement geometry is 45°/0°;
- that National members, other appropriate Authorities and manufacturers providing Marine Aids to Navigation services adopt the system for surface colours set out in the annexes to this Recommendation;

REQUESTS the AtoN Engineering and Sustainability Committee or such other committee as the Council may direct to keep this Recommendation under review and to propose amendments, as necessary.

ANNEX A ORDINARY COLOURS

Table 1 Specification of ordinary colours

Colour	Boundary	Equation of the boundary limits	Luminance factor	
			Minimum	Maximum
Red	Purple White Orange	$y = 0.345 - 0.051 x$ $y = 0.910 - x$ $y = 0.314 + 0.047 x$	0.07	-
Orange	Red White Yellow	$y = 0.265 + 0.205 x$ $y = 0.910 - x$ $y = 0.207 + 0.390 x$	0.20	-
Yellow	Orange White Green	$y = 0.108 + 0.707 x$ $y = 0.910 - x$ $y = 1.35 x - 0.093$	0.50	-
Green	Yellow White Blue (Preferred) Blue (General)	$y = 0.313$ $y = 0.243 + 0.670 x$ $y = 0.636 - 0.982 x$ $y = 0.493 - 0.524 x$	0.10	-
Blue	Green White Purple	$y = 0.118 + 0.675 x$ $y = 0.700 - 2.30 x$ $y = 1.65 x - 0.187$	0.07	-
White	Purple Blue Green Yellow	$y = 0.010 + x$ $y = 0.610 - x$ $y = 0.030 + x$ $y = 0.710 - x$	0.75	-
Black	Purple Blue Green Yellow	$y = x - 0.030$ $y = 0.570 - x$ $y = 0.050 + x$ $y = 0.740 - x$	-	0.03

(x, y) chromaticity coordinates of the corners of the recommended regions for ordinary colours specified in Table 1.

Table 2 Corners of the chromaticity regions of ordinary colours

Colour	1		2		3		4	
	x	y	x	y	x	y	x	y
Red	0.690	0.310	0.595	0.315	0.569	0.341	0.655	0.345
Orange	0.610	0.390	0.535	0.375	0.506	0.404	0.570	0.429
Yellow	0.522	0.477	0.470	0.440	0.427	0.483	0.465	0.534
Green (Preferred)	0.313	0.682	0.313	0.453	0.238	0.402	0.004	0.632
Green (General)	0.313	0.682	0.313	0.453	0.210	0.383	0.015	0.485
Blue	0.078	0.171	0.196	0.250	0.225	0.184	0.137	0.038
White	0.350	0.360	0.300	0.310	0.290	0.320	0.340	0.370
Black	0.385	0.355	0.300	0.270	0.260	0.310	0.345	0.395

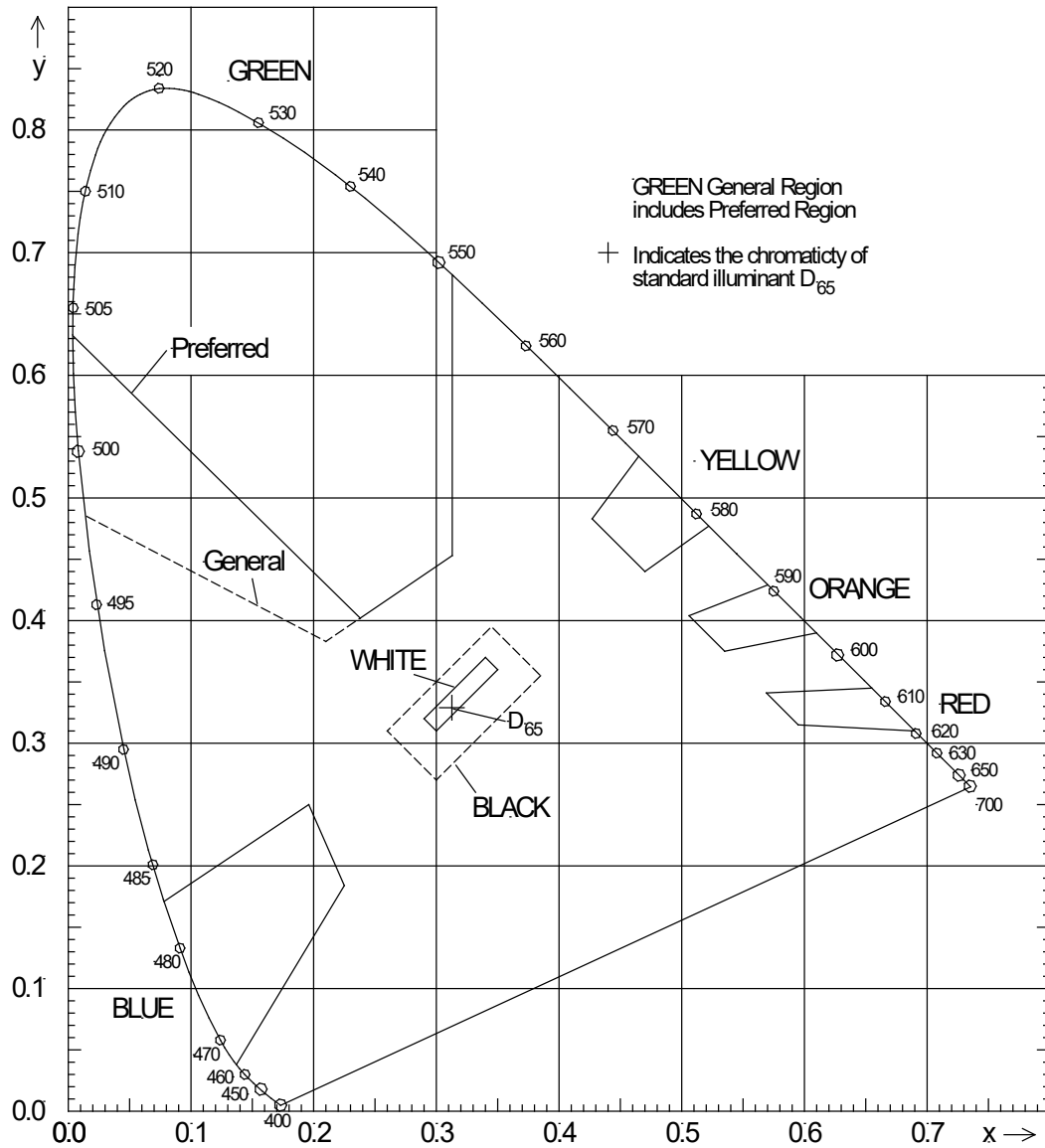


Figure 1 Chromaticity regions for ordinary colours

ANNEX B FLUORESCENT COLOURS

Table 3 Specification of fluorescent colours

Colour	Boundary	Equation of the boundary limits	Minimum Luminance factor
Red	Purple White Orange	$y = 0.345 - 0.051 x$ $y = 0.910 - x$ $y = 0.314 + 0.047 x$	0.25
Orange	Red White Yellow	$y = 0.265 + 0.205 x$ $y = 0.910 - x$ $y = 0.207 + 0.390 x$	0.40
Yellow	Orange White Green	$y = 0.108 + 0.707 x$ $y = 0.910 - x$ $y = 1.35 x - 0.093$	0.60
Green	Yellow White Blue (Preferred) Blue (General)	$y = 0.313$ $y = 0.243 + 0.670 x$ $y = 0.636 - 0.982 x$ $y = 0.493 - 0.524 x$	0.25

(x, y) chromaticity coordinates of the corners of the recommended regions for fluorescent colours specified in Table 3.

Table 4 Corners of the chromaticity regions of fluorescent colours

Colour	1		2		3		4	
	x	y	x	y	x	y	x	y
Red	0.690	0.310	0.595	0.315	0.569	0.341	0.655	0.345
Orange	0.610	0.390	0.535	0.375	0.506	0.404	0.570	0.429
Yellow	0.522	0.477	0.470	0.440	0.427	0.483	0.465	0.534
Green (Preferred)	0.313	0.682	0.313	0.453	0.238	0.402	0.004	0.632
Green (General)	0.313	0.682	0.313	0.453	0.210	0.383	0.015	0.485

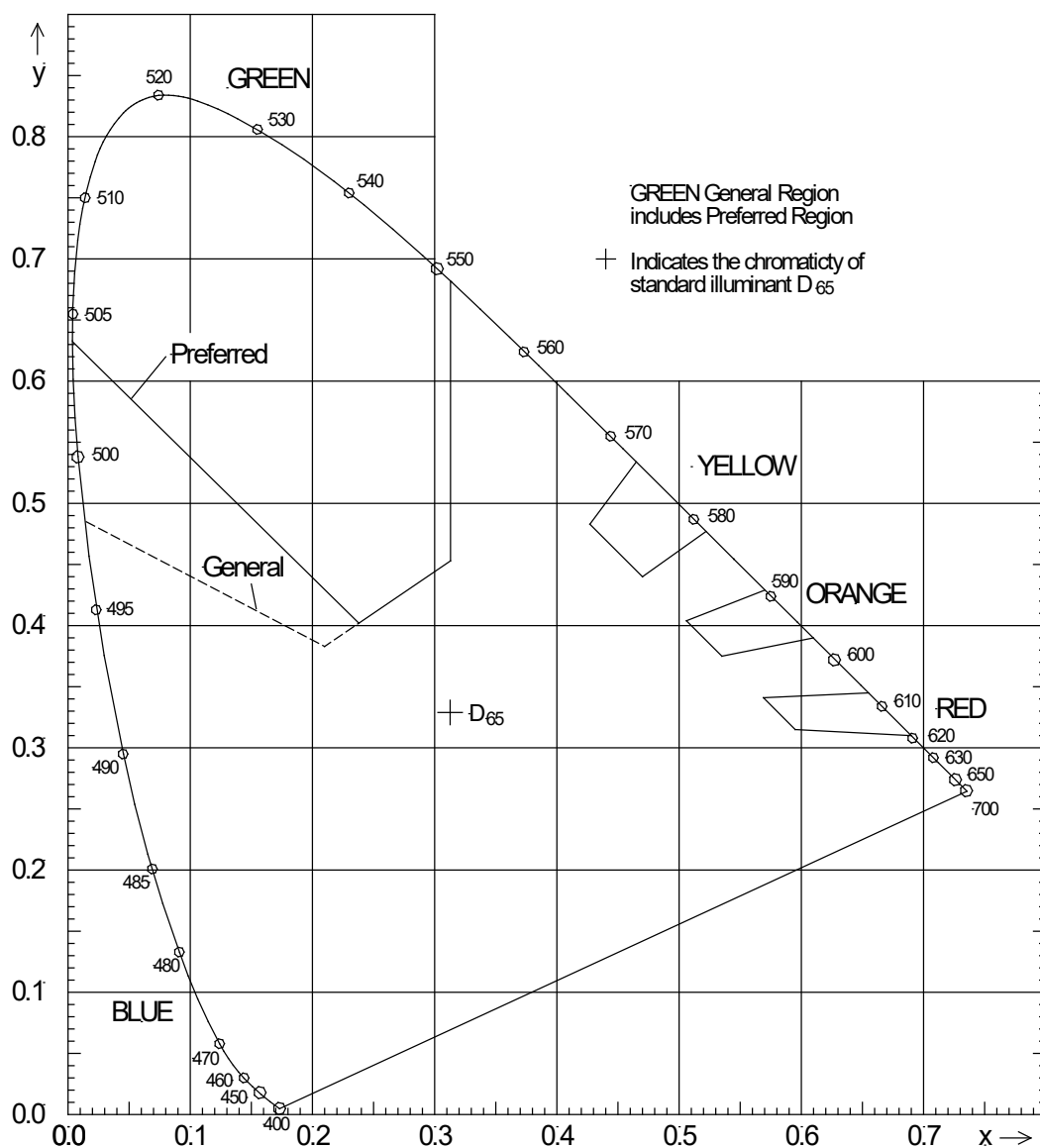


Figure 2 Chromaticity regions for fluorescent colours