



SURFACE VEHICLE STANDARD

J578™

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Superseding J578 MAR2016

Color Specification

RATIONALE

There are instances where two distinct lighting functions with different individual colors, when operated simultaneously, may cause confusion in a traffic environment by producing a color of light different than that of either function operated alone. This SAE J578 update provides guidance for device testers and lighting manufacturers on awareness and managing this effect, which can occur during simultaneous operation of multiple lighting functions that are optically combined or separate, but in close proximity. The optically combined situation is addressed in this document, but the close proximity situation is not because present color measurement and optical simulation approaches cannot reliably predict and measure it.

The precautions in A.1 were modified and moved to Section 4, because they pertain to color variations likely to occur in optically combined lamps providing multiple lighting functions of differing colors.

The title of SAE J774, "Emergency Warning Device and Emergency Warning Device Protective Container," was updated.

The publication number of CFR Title 49 Part 571.125, "Warning Devices, 39 FR 28636, Aug. 9, 1974 as amended at 40 FR 4, Jan. 2, 1975," was updated.

The publication number of CFR Title 49 Part 571.108, "Lamps, Reflective Devices and Associated Equipment (FMVSS 108)," was updated.

A.6, which listed ASTM E308 as a cited publication, was removed, since this document is already referenced in 2.1.3.

1. SCOPE

This SAE Standard defines and provides a means for the control of colors employed in motor vehicle external lighting equipment, including lamps and reflex reflectors. The document applies to the overall effective color of light emitted by the device in any given direction, and not to the color of the light from a small area of the lens. It does not apply to pilot, indicator, or tell-tale lights.

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2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J774 Emergency Warning Device and Emergency Warning Device Protective Container

2.1.2 Code of Federal Regulations (CFR)

Available from the United States Government Printing Office, 732 North Capitol Street, NW, Washington, DC 20401, Tel: 202-512-1800, www.gpo.gov.

CFR Title 49 Part 571.125 Warning Devices, 39 FR 28636, Aug. 9, 1974 as amended at 40 FR 4, Jan. 2, 1975

CFR Title 49 Part 571.108 Lamps, Reflective Devices and Associated Equipment (FMVSS 108)

2.1.3 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E308 Standard Practice for Computing the Colors of Objects by Using the CIE System

2.1.4 CIE Publications

Available from CIE Central Bureau, Babenbergerstrasse 9/9A, 1010 Vienna, Austria, Tel: +43 1 714 31 87, www.cie.co.at.

CIE 1931 Standard - Colorimetry

2.2 Related Documents

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 IES Publications

Available from Illuminating Engineering Society, 120 Wall Street, Floor 17, New York, NY 10005-4001, Tel: 212-248-5000, www.ies.org.

IES TM-27-24 IES Standard Format for the Electronic Transfer of Spectral Data.

3. DEFINITIONS

3.1 CHROMATICITY COORDINATES

The fundamental requirements for color are expressed as chromaticity coordinates according to the CIE (1931) standard colorimetric system (see Figure 1). The following requirements shall apply when measured by the tristimulus or spectrophotometric methods.

3.1.1 Red

The color of light emitted from the device shall fall within the following boundaries:

Boundary Equations	Boundary Vertex Points	
	x	y
$y = 0.335$ (yellow boundary)	0.665	0.335
$y = 0.980 - x$ (purple boundary)	0.645	0.335
	0.721	0.259
	0.735	0.265

3.1.2 Yellow (Amber)

The color of light emitted from the device shall fall within the following boundaries:

Boundary Equations	Boundary Vertex Points	
	x	y
$y = x - 0.120$ (green boundary)	0.560	0.440
$y = 0.390$ (red boundary)	0.545	0.425
$y = 0.790 - 0.670x$ (white boundary)	0.597	0.390
	0.610	0.390

3.1.2.1 Selective Yellow (See A.1)

The color of light emitted from the device shall fall within the following boundaries:

Boundary Equations	Boundary Vertex Points	
	x	y
$y = 1.290x - 0.100$ (green boundary)	0.480	0.519
$y = 0.138 + 0.580x$ (red boundary)	0.454	0.486
$y = 0.440$ (white boundary)	0.500	0.440
$y = 0.940 - x$ (white boundary)	0.521	0.440
	0.545	0.454