



SURFACE VEHICLE RECOMMENDED PRACTICE

J573™

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Superseding J573 JUN2011

Signal and Marking Light Sources

RATIONALE

The following revisions were made:

- a. Inserted 2.2.2 with references for UN Regulations 37 and 128 and UN R.E.5.
- b. A cross-reference to SAE J2560 was added for halogen filament light sources suitable for signal and marking lighting.
- c. Added the option of using IEC 60809, UN Regulations 37 and 128, and UN R.E.5 as alternate sources for determining filament, or light emitting area location.
- d. Table 2A was expanded to include more typical signal and marking filament light sources for motor vehicles.
- e. Table 2B was expanded to include new standardized LED light sources: LW2, LR3A/B, LW3A/B, LY3A/B, LR4A/B, LR5A/B, LW5A/B, LY5A/B, LR6A/B, L1A/6, and L1B/6.
- f. Newly entered light source specification data was taken from U.N. R.E.5 and/or provided by light source manufacturers.
- g. The definition of light center was harmonized with UN R.E.5, which is an improved definition that also adequately covers LED light sources.
- h. The test section (4.3) for LED light sources was split between the legacy LR1 light source (present in the June 2011 issue of SAE J573) and the other new LED light sources. Test methods for all LED light sources other than LR1 are included through normative referencing to UN Regulation 128, UN R.E.5, and IEC-60061-1, where the newly introduced Table 9 provides the references.
- i. The requirements sections for LED light sources (5.4 and following) are dedicated to all LED light sources other than LR1. Specifications and requirements for all LED light sources other than LR1 are included through normative referencing to UN Regulation 128, UN R.E.5, and IEC-60061-1, where the newly introduced Table 9 (Replaceable LED light sources and related dimensional figures) provides the references.
- j. The existing requirements for the LR1 were moved to a new Section 6.
- k. Introduction of a new Table 10 to provide a direct reference to UN Regulation 128 and UN R.E.5 for the thermal behavior of the luminous flux of LED light sources.
- l. Existing tables were converted to a new format.

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Documents

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1. SCOPE

Most signal and marking lighting devices have light sources (bulbs), which can be based on either filament or LED technology. To assure field replacement, it is important that light source types employed be readily available in normal service channels. This document defines the physical, electrical, and photometric characteristics necessary to achieve a proper replacement for popular types of signal and marking light sources.

Some of the design characteristics in this document are listed solely for the sake of standardization and are not intended to describe the performance of lighting devices (lamp assemblies) on the vehicle.

Halogen filament light sources suitable for signal and marking lighting are specified in SAE J2560.

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 J567	Light Source Retention System
SAE J578	Chromaticity Requirements for Ground Vehicle Lamps and Lighting Equipment
SAE J1330	Photometry Laboratory Accuracy Guidelines
SAE J2357	Application Guidelines for Electronically Driven and/or Controlled Exterior Automotive Lighting Equipment
SAE J2560	Halogen Light Source Performance Requirements for Motor Vehicle Forward Lighting

2.1.2 ANSI Accredited Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ANSI_ANSLG_C81.61	Electric Lamp Bases
ANSI_ANSLG_C81.62	Lamp Holders for Electric Lamps
ANSI_ANSLG_C81.63	Gauges for Electrical Lamp Bases and Lamp Holders
ANSI ANSLG SR25e - 2009	Assigned Miniature Lamp Codes

2.1.3 International Electrotechnical Commission (IEC) Publications

Available from IEC Central Office, 3, rue de Varembe, P.O. Box 131, CH-1211 Geneva 20, Switzerland, Tel: +41 22 919 02 11, www.iec.ch.

IEC Publication 60061-1	Lamp Caps and Holders Together with Gauges for the Control of Interchangeability and Safety - Part 1: Lamp caps
IEC Publication 60809	Lamps and Light Sources for Road Vehicles - Dimensional, Electrical and Luminous Requirements

IEC Publication 60810	Lamps, Light Sources and LED Packages for Road Vehicles - Performance Requirements
IEC Technical Report 62471-2	Photobiological Safety of Lamps and Lamp Systems - Part 2: Guidance on Manufacturing Requirements Relating to Non-Laser Optical Radiation Safety

2.2 Related Publications

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

2.2.1 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 J387	Terminology - Motor Vehicle Lighting
SAE J2442	Harmonized Provisions for Installation of Exterior Lamps and Retro-Reflecting Devices on Road Vehicles Except Motorcycles

2.2.2 United Nations Publications

Available from United Nations Economic Commission for Europe, Palais des Nations, CH-1211, Geneva 10, Switzerland, Tel: +41-0-22-917-12-34, www.unece.org.

UN Regulation 37	Uniform Provisions Concerning the Approval of Filament Light Sources for Use in Approved Lamp Units of Power-Driven Vehicles and of Their Trailers
UN Regulation 128	Uniform Provisions Concerning the Approval of Light Emitting Diode (LED) Light Sources for Use in Approved Lamp Units on Power-Driven Vehicles and Their Trailers
UN R.E.5	Consolidated Resolution on the Common Specification of Light Source Categories (R.E.5) (ECE/TRANS/WP.29/1127 and revisions)

2.2.3 CIE Publications

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

Publication No. 70 - 1987	The Measurement of Absolute Luminous Intensity Distributions
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2.2.4 IES Publications

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

LM-45	Approved Method for Electrical and Photometric Measurements of General Service Incandescent Filament Lamps, IES Lighting Handbook, Reference Volume, III.NA
LM-79-19	Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products

2.3 Index of Tables and Figures

See Table 1.

Table 1 - Index of tables and figures

Figure	Table	Description
1		Continuous filament
2		Legged filament
3		Typical signal and marking filament light sources
	2A	Typical signal and marking filament light sources for motor vehicles
	2B	Typical signal and marking LED light sources for motor vehicles
	3	Basic filament light source dimensions
4		Filament shapes
5		Filament location on dual function light sources
6	4	BA9s base dimensions to be controlled on a finished filament light source (previous base designation: A1)
7a, 7b, 7c	5	BA15s, BA15d, and BAY15d base dimensions to be controlled on a finished filament light source (previous base designation: B1, B2, and C2)
8	6	Base type W2.1x4.9d (previous base designation: W-1 wedge)
9	7	Base type W2.1x9.2d (previous base designation: W-2 wedge)
10	8	Base type W2.5x16d wedge and W2.5x16q wedge (previous base designation: SC wedge and DC wedge)
11		LED light source - LR1
12		LED light emitting area
13		Set up to measure LED luminous intensity distribution
	9	Replaceable LED light sources and related dimensional figures
	10	Replaceable LED light sources and thermal behavior of luminous flux
	11	Relative intensity values for stop function of normal and rated LED light source LR1

3. DEFINITIONS

3.1 TEST SAMPLE

Test samples are light sources fabricated from a normal production process.

3.2 FILAMENT LIGHT SOURCE

Device in which light is produced by means of one or more filaments heated to incandescence by the passage of an electric current.

3.3 LED LIGHT SOURCE

A light source where the visible radiation is emitted from one or more LEDs. An LED light source may or may not require an additional electronic control unit (gear) and may or may not require additional provisions for thermal management.

3.4 SEASONED LIGHT SOURCE

3.4.1 FILAMENT TYPE

A filament light source which is energized, at design voltage, for 1% of its rated life or 10 hours; whichever is shorter. See Table 2A for design voltage and life rating (for light sources not listed see manufacturer's data).

3.4.2 LED TYPE

LED light sources operated at their design voltage for at least 48 hours. Operation shall be at the highest design power function (mode). If multiple functions are present with separate LED sources, each function (mode) shall be seasoned individually. See Table 2B for design voltage and life rating (for light sources not listed see manufacturer's data).

3.5 STANDARD FILAMENT LIGHT SOURCE (BULB, LAMP)

A light source which meets reduced (tighter) tolerances for both filament position and photometry. Light sources are seasoned to attain photometric stability.

3.6 ACCURATE RATED LIGHT SOURCE

A seasoned light source unit operated at design mean spherical luminous intensity and having its light source(s) positioned within strict tolerances as specified in the applicable standard.

Informational note: Accurate rated light sources are necessary to certify that lighting devices (lamps) meet legal illumination requirements. This normally applies to light sources used for tail, stop, park, turn, or combination functions in addition to forward lighting devices.

3.6.1 FILAMENT TYPE

A properly seasoned filament light source operated at design mean spherical candela (mscd), and having its filament(s) within ± 0.25 mm of nominal design position (X, Y, Z axes). It is necessary to rate each filament separately in a double filament bulb and may require calibrating two separate bulbs to achieve an accurate rated bulb qualification for each filament.

3.6.2 LED TYPE

A properly seasoned LED light source operated in steady-state condition at design mean spherical candela (mscd) and with the light center length and light emitting area within ± 0.10 mm of nominal design position (X, Y, Z axes). It is necessary to rate each function separately in multi-function LED light sources and may require calibrating two separate LED light sources to achieve an accurate rated source qualification for each function.

3.7 FILAMENT LIGHT SOURCES ABBREVIATIONS

L = maximum exposed length

LCL = light center length

WAA = wide axial alignment

NAA = narrow axial alignment

Table 2A - Typical signal and marking filament light sources for motor vehicles

ANSI No.	UN/IEC Designation	Mean Spherical Candela	MScd Tol. $\pm$ %	Design Voltage	Design Amps	Amp Tol. $\pm$ %	Rated Average Lab Life Hours ⁽¹⁾	Filament Shape or Type ⁽²⁾	LCL mm	LCL Tol. $\pm$ mm	Axial Align. $\pm$ mm	Light Source Type ⁽³⁾	Base Type ⁽⁴⁾
37		0.5	30	14.0	0.09	15	1500	C-2F	10.2	1.0	1.0	T-1 ¾	W2.1x4.9d
73		0.3	30	14.0	0.08	15	15000	C-2F	10.2	1.0	1.0	T-1 ¾	W2.1x4.9d
74		0.7	30	14.0	0.10	15	500	C-2F	10.2	1.0	1.0	T-1 ¾	W2.1x4.9d
57 ⁽⁷⁾		2	20	14.0	0.24	10	500	C-2V	14.2	2.3	2.3	G-4 1/2	BA9s
1895 ⁽⁷⁾		2	20	14.0	0.27	10	1500	C-2F	14.2	2.3	2.3	G-4 1/2	BA9s
67 ⁽⁷⁾		4	15	13.5	0.59	8	5000	C-2R	20.6	2.3	2.3	G-6	BA15s
89 ⁽⁷⁾		6	15	13.0	0.58	8	750	C-2R	19.0	2.3	2.3	G-6	BA15s
97 ⁽⁷⁾		4	15	13.5	0.69	8	5000	C-2V	20.6	2.3	2.3	G-6	BA15s
158		2	20	14.0	0.24	10	500	C-2F	14.2	2.3	1.5	T-3 1/4	W2.1x9.2d
161 ⁽⁷⁾		1	20	14.0	0.19	10	1500	C-2F	14.2	2.3	2.0	T-3 1/4	W2.1x9.2d
168		3	20	14.0	0.35	10	1500	C-2F	14.2	2.3	2.0	T-3 1/4	W2.1x9.2d
194		2	20	14.0	0.27	10	1500	C-2F	14.2	2.3	2.0	T-3 1/4	W2.1x9.2d
No ANSI Number	W3W ⁽¹⁰⁾	1.75	30	13.5	0.255	Max	2000	C-2R	12.7	1.5	1.5	T-3 1/4	W2.1x9.5d
No ANSI Number	W5W ⁽¹⁰⁾	4	20	13.5	0.407	Max	1000	C-2R C-2V	12.7	1.5	1.5	T-3 1/4	W2.1x9.5d
No ANSI Number	WR5W ⁽¹⁰⁾	0.95	25	13.5	0.37	10	1000	C2-R	12.7	1.5	1.5	T3-1/4	W2.1x9.5d
No ANSI Number	WY5W ⁽¹⁰⁾	2.4	30	13.5	0.407	Max	1000	C-2R	12.7	1.5	1.5	T-3 1/4	W2.1x9.5d
PC175		5	20	14.0	0.58	10	1000	C-2F	14.2	2.3	2.0	T-3 1/4	PC
PC194		2	20	14.0	0.27	10	1500	C-2F	14.2	2.3	2.0	T-3 1/4	PC
906		6	15	13.0	0.69	10	1000	C-2F	20.6	2.3	2.3	T-5	W2.1x9.2d
912		12	15	12.8	1.00	10	1000	C-2R	20.6	2.3	2.3	T-5	W2.1x9.2d
921		21	20	12.8	1.40	10	1000	C-2R	20.6	2.3	2.3	T-5	W2.1x9.2d
	W16W ⁽¹⁰⁾	24.66	20	13.5	1.58	Max	500	C-2R	20.6	2.3	1.0	T-5	W2.1x9.5d
1003 ⁽⁷⁾		15		12.8	0.94		200	C-6	26.9			B-6	BA15s
1141 ⁽⁷⁾		21		12.8	1.44		1000	C-6	31.75	1.5	1.5	S-8	BA15s
1156 ⁽⁷⁾		32	10	12.8	2.10	5	600	C-6	31.75	1.5	1.5	S-8	BA15s
1156NA ⁽⁷⁾		24	10	12.8	2.10	5	600	C-6	31.75	1.5	1.5	S-8	BA15s
1157 ⁽⁷⁾		32	10	12.8	2.10	5	600	C-6	31.75	1.5	1.5	S-8	BAY15d
		3	12	14.0	0.59	8	5000	C-6	⁽⁶⁾				
1157A / 1157NA ⁽⁷⁾		24	30	12.8	2.10	5	600	C-6	31.75	1.5	1.5	S-8	BAY15d
		2.2	30	14.0	0.59	8	5000	C-6	⁽⁶⁾				
2057 ⁽⁷⁾		32	10	12.8	2.10	5	1200	C-6	31.75	1.5	1.5	S-8	BAY15d
		2	12	14.0	0.48	8	5000	C-6	⁽⁶⁾				
2057A / 2057NA ⁽⁷⁾		24	30	12.8	2.10	5	1200	C-6	31.75	1.5	1.5	S-8	BAY15d
		1.5	30	14.0	0.48	8	5000	C-6	⁽⁶⁾				
2357 ⁽⁷⁾		40	10	12.8	2.23	5	400	C-6	31.75	1.5	1.5	S-8	BAY15d
		3	12	14	0.59	8	5000	C-6	⁽⁶⁾				
2357NA ⁽⁷⁾		30	30	12.8	2.23	5	400	C-6	31.75	1.5	1.5	S-8	BAY15d
		2.2	30	14	0.59	8	5000	C-6	⁽⁶⁾				

Table 2A - Typical signal and marking filament light sources for motor vehicles (continued)

ANSI No.	UN/IEC Designation	Mean Spherical Candela	MScd Tol. $\pm$ %	Design Voltage	Design Amps	Amp Tol. $\pm$ %	Rated Average Lab Life Hours ⁽¹⁾	Filament Shape or Type ⁽²⁾	LCL mm	LCL Tol. $\pm$ mm	Axial Align. $\pm$ mm	Light Source Type ⁽³⁾	Base Type ⁽⁴⁾
3047		21	12	12.8	1.6	5	2300	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2	12	14.0	0.48	8	10000	C-6	⁽⁶⁾				
3057		32	10	12.8	2.10	5	1200	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2	12	14.0	0.48	8	5000	C-6	⁽⁶⁾				
3057K		32	10	12.8	2.10	5	2000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2	12	14.0	0.48	8	10000	C-6	⁽⁶⁾				
3057A / 3057NA		24	30	12.8	2.10	5	1200	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		1.5	30	14.0	0.48	8	5000	C-6	⁽⁶⁾				
3155		21	10	12.8	1.60	8	1500	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16d
3156	P27W	32	10	12.8	2.10	5	1200	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16d
3156NA		24	30	12.8	2.10	5	1200	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16d
3157	P27/7W	32	10	12.8	2.10	5	1200	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		3	12	14.0	0.59	8	5000	C-6	⁽⁶⁾				
3157K	P27/7W	32	10	12.8	2.10	5	2000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		3	12	14.0	0.59	8	10000	C-6	⁽⁶⁾				
3157A / 3157NA		24	30	12.8	2.10	5	1200	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2.2	30	14.0	0.59	8	5000	C-6	⁽⁶⁾				
3157AK		24	30	12.8	2.10	5	2000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2.2	30	14.0	0.59	8	10000	C-6	⁽⁶⁾				
3456 / 3456K		40	10	12.8	2.23	5	800	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16d
3357		40	10	12.8	2.23	5	400	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		3.0	12	14.0	0.59	8	5000	C-6	⁽⁶⁾				
3357A / 3357NA / 3457A / 3457NA		30	30	12.8	2.23	5	400	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2.2	30	14.0	0.59	8	5000	C-6	⁽⁶⁾				
3457 / 3457K		40	10	12.8	2.23	5	800	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		3.0	12	14.0	0.59	8	10000	C-6	⁽⁶⁾				
3457NAK		30	30	12.8	2.23	5	800	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2.2	30	14.0	0.59	8	10000	C-6	⁽⁶⁾				
3757A / 3757NA	PY27/7W	22.28	15	13.5	2.38	Max	600	C-6	27.9	1.0	1.0	S-8/GT-8	WX2.5x16q
		1.67	15	13.5	0.63	Max	5000	C-6	⁽⁶⁾				
4057		32	10	12.8	2.23	5	4000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2	12	14.0	0.48	8	10000	C-6	⁽⁶⁾				
4114		32	10	14.0	2.23	5	4000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		3	12	14.0	0.59	8	10000	C-6	⁽⁶⁾				
4157		32	10	12.8	2.23	5	4000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		3	12	14.0	0.59	8	10000	C-6	⁽⁶⁾				
4157NAK		24	30	12.8	2.23	5	4000	C-6	27.9	1.0	1.0	S-8/GT-8	W2.5x16q
		2.2	30	14.0	0.59	8	10000	C-6	⁽⁶⁾				

Table 2A - Typical signal and marking filament light sources for motor vehicles (continued)

ANSI No.	UN/IEC Designation	Mean Spherical Candela	MScd Tol. ± %	Design Voltage	Design Amps	Amp Tol. ± %	Rated Average Lab Life Hours ⁽¹⁾	Filament Shape or Type ⁽²⁾	LCL mm	LCL Tol. ± mm	Axial Align. ± mm	Light Source Type ⁽³⁾	Base Type ⁽⁴⁾
5200	PY24W ⁽¹⁰⁾	23.9	+15 -25	13.5	1.78	4.1	1900 Flashing	C-8Z	24	0.5	0.5	P-6	PGU20-4
5201	PS19W ⁽¹⁰⁾	27.9	15	13.5	1.41	5.2	1900	C-8Z	24	0.5	0.5	P-6	PG20-1
5202	PS24W ⁽¹⁰⁾	39.8	+10 -20	13.5	1.78	4.1	1400	C-8Z	24	0.5	0.5	P-6	PG20-3
7010 ⁽¹¹⁾	PC16W ⁽¹⁰⁾	23.9	15	13.5	1.19	6	2800	C-8Z	18.5	0.5	0.7	G-5-1/4	PU20d-1
7011 ⁽¹²⁾	PCY16W ⁽¹⁰⁾	14.3	20	13.5	1.19	6	2300 Flashing	C-8Z	18.5	0.5	0.5	G5-1/4	PU20d-2
7012 ⁽¹³⁾	HiPerClick19W	27.9	15	13.5	1.41	5.2	1900	C-8Z	19.5	0.5	0.5	P-6	PU20d-3
7013 ⁽¹⁴⁾	HiPerClick24W	39.8	+10 -20	13.5	1.78	4.1	1400	C-8Z	19.5	0.5	0.5	P-6	PU20d-5
7014 ⁽¹⁵⁾	HiPerClick24W NA	23.9	+15 -25	13.5	1.78	4.1	2300 Flashing	C-8Z	19.5	0.5	0.5	P-6	PU20d-6
828	P13W ⁽¹⁰⁾	19.9	+15 -20	13.5	1.25	11	7400	C-8Z	25	0.3	0.5	G-5-1/4	PG18.5d-1
2502	PSY19W ⁽¹⁰⁾	17.1	20	13.5	1.41	5.2	2200 Flashing	C-8Z	24	0.5	0.5	P-6	PG20-2
2503	PSY24W ⁽¹⁰⁾	23.9	+15 -25	13.5	1.78	4.1	1900 Flashing	C-8Z	24	0.5	0.5	P-6	PG20-4
2504	PSX24W ⁽¹⁰⁾	39.8	+10 -15	13.5	1.78	4.1	1400	C-8Z	24	0.35	0.5	P-6	PG20-7
6851	PSX26W ⁽¹⁰⁾	39.8	10	13.5	1.78	4.1	1400	C-8Z	24	0.3	0.5	P-6	PG18.5d-3
7440	W21W ⁽¹⁰⁾	36.6	15	13.5	1.85	6	300	C-6	29	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16d
7440A/ 7440NA		22	30	13.5	1.85	6	300	C-6	29	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16d
7440LL	W21W ⁽¹⁰⁾	36.6	15	13.5	1.85	6	600	C-6	29	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16d
7440ULL	W21W ⁽¹⁰⁾	36.6	15	13.5	1.85	6	3000	C-6	29	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16d
7441	-	32	15	12.8	2.1	5	600	C-6	29	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16d
7442	-	32	15	12.8	2.1	5	600	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
	-	3	26	14.0	0.59	10	5000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
7442NA	-	24	30	12.8	2.23	10	2000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
	-	2.2	30	14.0	0.59	10	5000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
7443	W21/5W ⁽¹⁰⁾	35	15	13.5	1.85	6	500	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
		2.8	20	13.5	0.44	10	1000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q

Table 2A - Typical signal and marking filament light sources for motor vehicles (continued)

ANSI No.	UN/IEC Designation	Mean Spherical Candela	MScd Tol. $\pm$ %	Design Voltage	Design Amps	Amp Tol. $\pm$ %	Rated Average Lab Life Hours ⁽¹⁾	Filament Shape or Type ⁽²⁾	LCL mm	LCL Tol. $\pm$ mm	Axial Align. $\pm$ mm	Light Source Type ⁽³⁾	Base Type ⁽⁴⁾
7443LL	W21/5W ⁽¹⁰⁾	35	15	13.5	1.85	6	750	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
		2.8	20	13.5	0.44	10	1500	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
7443ULL	W21/5W ⁽¹⁰⁾	35	15	13.5	1.85	6	3000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
		2.8	20	13.5	0.44	10	6000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
7444	-	32	15	12.8	2.23	10	800	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
	-	3	26	14.0	0.59	10	5000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
7444LL	-	32	15	12.8	2.23	10	2000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
	-	3	26	14.0	0.59	10	10000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
7444NA	-	30	30	12.8	2.23	10	800	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
	-	2.2	30	14.0	0.59	10	5000	C-6	25	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	W3x16q
No ANSI Number-	WY21W ⁽¹⁰⁾	22.3	20	13.5	1.85	6	300	C-6	29	Note (8)	Note (8)	T-6-1/2 ⁽⁹⁾	WX3x16d
7445	PW16W	23.9	15	13.5	1.19	6	2200	C-8Z	17.1	0.4	0.5	G-5-1/4	WP3.3x14.5-8
7446	PW19W	27.9	15	13.5	1.41	5.2	1900	C-8Z	18.1	0.4	0.5	P-6	WP3.3x14.5-1
7447	PW24W	39.8	+10/-20	13.5	1.78	4.1	1400	C-8Z	18.1	0.4	0.5	P-6	WP3.3x14.5-3
7448	PWY16W	14.3	20	13.5	1.19	6	2200 Flashing	C-8Z	17.1	0.4	0.5	G-5-1/4	WP3.3x14.5-9
7449	PWY19W	17.1	20	13.5	1.41	5.2	2200 Flashing	C-8Z	18.1	0.4	0.5	P-6	WP3.3x14.5-2
7450	PWY24W	23.9	+15/-25	13.5	1.78	4.1	1900 Flashing	C-8Z	18.1	0.4	0.5	P-6	WP3.3x14.5-4
No ANSI Number	WT21W	36.6	15	13.5	1.85	6	1000	C-6	27.9	1.0	1.5	T-6-1/2	WUX2.5x16d
No ANSI Number	WTY21W	22	20	13.5	1.85	6	1000	C-6	27.9	1.0	1.5	T-6-1/2	WUY2.5x16d
No ANSI Number-	WT21/7W	35	15	13.5	1.85	6	1000	C-6	27.9	1.0	1.5	T-6-1/2	WZX2.5x16q
		2.79	20	13.5	0.58	8	10000	C-6			2.4	T-6-1/2	WZX2.5x16q
No ANSI Number -	WTY21/7W	22	20	13.5	1.85	6	1000	C-6	27.9	1.0	1.5	T-6-1/2	WZY2.5x16q
		1.75	20	13.5	0.58	8	10000	C-6			2.4	T-6-1/2	WZY2.5x16q
4257	-	40.0		12.8	2.23		800	C-6	27.9	1.0	1.5	T-6-1/2	WUU2.5x16q
		3.0		14.0	0.59		10000	C-6			2.4	T-6-1/2	WUU2.5x16q
4257NAN	-	30.0		12.8	2.23		800	C-6	27.9	1.0	1.5	T-6-1/2	WUZ2.5x16q
		2.2		14.0	0.59		10000	C-6			2.4	T-6-1/2	WUZ2.5x16q

Table 2A - Typical signal and marking filament light sources for motor vehicles (continued)

ANSI No.	UN/IEC Designation	Mean Spherical Candela	MScd Tol. $\pm$ %	Design Voltage	Design Amps	Amp Tol. $\pm$ %	Rated Average Lab Life Hours ⁽¹⁾	Filament Shape or Type ⁽²⁾	LCL mm	LCL Tol. $\pm$ mm	Axial Align. $\pm$ mm	Light Source Type ⁽³⁾	Base Type ⁽⁴⁾
No ANSI Number	H6W ⁽¹⁰⁾	10	12	13.5	0.52	5	650	C-6	15.0	0.75	0.75		BAX9s
No ANSI Number	H21W ⁽¹⁰⁾	48	12	13.5	1.85	5	300	C-6	20.0	0.5	0.75		BAY9s
No ANSI Number	HY21W ⁽¹⁰⁾	8	17	13.5	1.85	5	300 Flashing	C-6	20.0	0.5	0.75		BAW9s
No ANSI Number	P21W	36.6	15	13.5	1.85	6	250	C-6	31.8	Note (8)	Note (8)	S-8	BA15s
No ANSI Number	P21/5W	35	15	13.5	1.85	6	220	C-6	31.8	Note (8)	Note (8)	S-8	BAY15d
		2.7	20	13	0.44	10	14	C-6	31.8	Note (8)	Note (8)	S-8	BAY15d
No ANSI Number	PR21W ⁽¹⁰⁾	8.75	20	13.5	1.85	6	500	C-6	31.8	Note (8)	Note (8)	S-8	BAW15s
No ANSI Number	PR21/5W ⁽¹⁰⁾	8.36 0.64	20 25	13.5 13.5	1.85 0.44	6 10	800 1800	C-6 C-6	31.8	Note (8)	Note (8)	S-8	BAW15d
No ANSI Number	PY21W	22.3	20	13.5	1.85	6	450	C-6	31.8	Note (8)	Note (8)	S-8	BAU15s

(1) ANSI rating.

(2) Filament types - see 3.9 and Figure 4.

(3) Light source types - see Figure 3.

(4) Base types - see Figures 6, 7A, 7B, 7C, 8, 9, and 10.

(5) See Figure 5 for filament spacing and light center length.

(6) Plane of pins with respect to filament is 90 degrees $\pm$ 15 degrees.

(7) Light-source listed for historical purpose. Typically used only for parts and service.

(8) Refer box system shown in Figure 5.

(9) See Figure 3.

(10) See 5.3.3.

(11) Alternate non-ANSI, non-UN designation HPC16W.

(12) Alternate non-ANSI, non-UN designation HPC16WY.

(13) Alternate non-ANSI, non-UN designation HPC19W.

(14) Alternate non-ANSI, non-UN designation HPC24W.

(15) Alternate non-ANSI, non-UN designation HPC24WY.