American National Standard

for electric lamps –

Single-ended tungsten-halogen lamps GZ9.5 base, T6 bulb, 36.5 mm LCL, 76.2 mm MOL with proximity reflector

Approved August 9, 1991

Secretariat: National Electrical Manufacturers Association

1 Scope

This standard defines the dimensional, physical, and other characteristics to assist in the proper application of tungsten-halogen lamps with GZ9.5 bases, T6 (T19) bulbs at 36.5 mm LCL and 76.2 mm maximum overall length with internal proximity reflectors. Lamps of various wattage and voltage designs are included.

The grouping of lamps in this standard is based on general physical characteristics. It *does not* imply that the lamps listed are interchangeable with each other in a particular application.

Lamps included in this standard are intended for photographic projection applications.

In general, the lamps in this standard are compatible with those in IEC Publication 357.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI C78.370-1982 (R1989), *Method for the designation of photo lamps*

ANSI C78.1450-1983 (R1989), *Method for life testing incandescent projection lamps*

ANSI C79.1-1979 (R1984), *Nomenclature for glass bulbs intended for use with electric lamps*

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ANSI C81.61-1990, *Electric lamp bases*[1)]

IEC Publication 682, *Standard method for measuring the seal (pinch) temperature of quartz-tungsten-halogen lamps*[2)]

3 Lamp designations

The systems for assigning lamp designations, as defined in ANSI C78.370 is commonly employed for the lamps described in this standard.

4 Physical characteristics

4.1 Base specifications

Finished lamps employing the GZ9.5 base shall comply with the detailed base requirements given in ANSI C81.40d. Base gauging procedures are given therein.

4.2 Bulb designations

Bulb designations are defined in ANSI C79.1. Due to the long term use of the conventional method of designation, its use will continue herein. Equivalent metric designations are shown in parenthesis, in contrast to the use of metric primary dimensions elsewhere in this standard.

4.3 Lamp characteristics

Nominal electrical, physical, and other characteristics of standard lamps are listed in table 1.

4.4 Dimensions

4.4.1 The lamp drawing of figure 1 defines the various dimensions and provides specific values where appropriate.

A typical product drawing is shown. Due to eccentricity and offset between the base and the bulb, the bulb may take up more room relative to the fixed position base. Dimension E is the radius of cylindrical space that defines the limit of bulb excursion relative to the centerline between the base pins.

The dimension LCL identifies the light center length and is a reference value. Dimension MOL is the maximum overall length.

4.4.2 The light source dimensions width (W), height (H), and thickness (T), define a volume centered on the light center length (LCL) and the base centerline within which all luminous parts of the filament shall be located. This is a maximum volume accounting for all possible positions of the filament. Actual filament size may be significantly smaller than the defined light source volume.

4.5 Life

The acceptability of life test results shall be ascertained in accordance with ANSI C78.1450.

5 Restrictions

5.1 Operating position

The lamps specified in this standard are restricted in operating position to that of base down through base horizontal position, unless noted otherwise in table 1.

5.2 Seal temperature

The lamps covered by this standard are limited in regards to the endurance of the metal-to-envelope seal. These lamps fall into two limiting classes; 400°C maximum and 450°C maximum. Table 2 shows the limitations of particular lamps.

5.3 Bulb wall temperature

The lamp's bulb wall temperature shall be maintained above 250°C for proper operation of the halogen cycle. An upper limit of approximately 900°C is recommended for maintaining the integrity of fused silica bulbs.

5.4 Shielding

A protective shield shall be provided relevant to the following cautionary notice:

To assure maximum safety during handling and use of the subject lamps, observe the following notices:

- Tungsten-halogen lamps operate at high temperature and at internal gas pressures

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[1)] This standard is a consolidation of ANSI C81.10-1976, C81.20-1976, C81.30-1976, C81.40-1976 and C81.50-1976

[2)] Available from ANSI, 11 West 42nd Street, New York, New York 10036.

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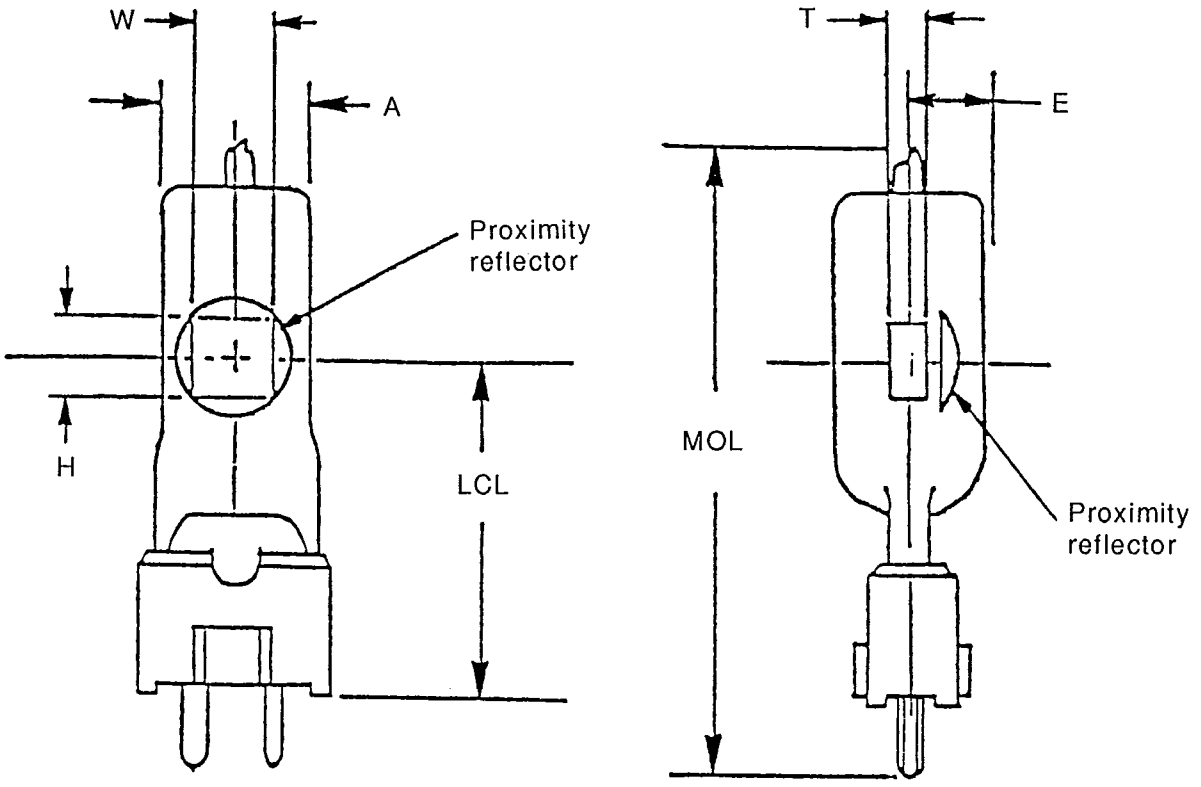

			Standard dimensions (mm)				
Lamp designation	A nom	E max	LCL ref	MOL	W max	H max	T max
FSX	19.0	12.70	36.50	76.20	10.70	12.20	5.72
FSY	19.0	12.70	36.50	76.20	10.70	12.20	5.72
EPD	19.0	12.70	36.50	76.20	10.67	12.85	5.72
EHA	19.0	12.70	36.50	76.20	10.67	10.67	5.72
EGZ	19.0	12.70	36.50	76.20	11.68	11.68	5.72
EMG	19.0	12.70	36.50	76.20	10.67	12.19	5.72

Figure 1 – Dimensions of GZ9.5 based T-H projection lamps

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Table 1 – GZ9.5 based, single-ended T-H lamps with T6 (T19) bulbs, 36.5 mm LCL, 76.2 mm MOL, and proximity reflector

Lamp designation	Rated wattage (watts)	Rated voltage (volts)	Rated life (hours)	Correlated color temp. (K)	Operating position
FSX	400	220	75	3200	BDTH
FSY	400	240	75	3200	BDTH
EPD	485	240	50	3250	BDTH
EHA	500	120	50	3250	BDTH
EGZ	500	120	100	3200	BDTH
EMG	500	220	75	3100	BDTH

Table 2 – Maximum seal temperature

Lamp designation	Maximum seal temperature °C
FSX	400
FSY	400
EPD	450
EHA	450
EGZ	450
EMG	450

above atmospheric pressure. Consequently, a lamp could shatter. Certain lamps may also emit some amount of ultraviolet radiation. Therefore, a suitable protective shield, screening technique, or both, shall be used with the luminaire to protect people and surroundings from both hazards.

– The information contained in the lamp manufacturer's caution notice shall always be read and observed.

6 Test procedures

6.1 Life

Lamps shall be tested in open racks, at the base-down operating position with cooling to maintain temperature limits. Additional procedures are defined in ANSI C78.1450.

6.2 Seal (pinch) temperature

The measurement procedure is defined in IEC Publication 682.

6.3 Operating temperature

Standard methods of measuring other lamp operating temperatures (bulb and base) are under consideration.

7 Information for luminare design

The proper luminaire design must take into account the several aspects of lamp restrictions mentioned in clause 4, operating position, seal temperature, bulb wall temperature, and shielding.

Annex A
(informative)

Bibliography

IEC Publication 357-1982, *Tungsten Halogen Lamps*

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