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JAPANESE INDUSTRIAL STANDARD

Automobile parts—Lighting and light signalling devices

 JIS D 5500—1995

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by

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Automobile parts — Lighting and
light signalling devices

D 5500-1995

1. **Scope** This Japanese Industrial Standard specifies principal lighting and light signalling devices (including reflex reflector) to be used for automobiles.

Remarks: The following standards are cited in this Standard:

JIS C 7035	Light emitting diodes (for indication)
JIS C 7506	Lamps for road vehicles
JIS C 7709	Lamp caps and holders
JIS D 0102	Glossary of terms relating to automobiles — Dimensions, masses, weights and performances of automobiles
JIS D 0103	Glossary of terms relating to electric equipments for automobiles
JIS D 0109	Glossary of terms relating to mopeds and motor- cycles
JIS D 0201	Automobile parts general rules of electroplating
JIS D 0202	General rules of coating films for automobile parts
JIS D 0203	Method of moisture, rain and spray test for automobile parts
JIS D 0205	Test method of weatherability for automotive parts
JIS D 1601	Vibration testing methods for automobile parts
JIS D 1619	Photometric testing methods of lighting and signalling equipment for automobiles
JIS D 5005	Nominal voltages and test voltages for automotive electric equipments
JIS D 5504	Sealed beam headlamp units for motor vehicles
JIS R 5210	Portland cement
JIS Z 8701	Specification of colours according to the CIE 1931 standard colorimetric system and the CIE 1964 supplementary standard colorimetric system

2. **Definitions** For the purpose of this Standard the definitions in JIS D 0103 as well as the following definitions apply:

- (1) **high mount stop lamp** The stop lamp equipped at the relatively higher position on a central part of rear surface of automobile.
- (2) **vehicle median plane** The longitudinal median plane of the class of vehicle equipped with lighting and light signalling devices, specified in JIS D 0102 or JIS D 0109.
- (3) **applicable class of vehicle** In the case where the class of vehicle equipped with the lighting and light signalling devices are identified, the name and type of that automobile or its popular name.

3. Classification, type, grade and nominal voltage

3.1 Class and type The class and type of lighting and light signalling devices are as given in Table 1.

Table 1. Class and type

Class		Type	
Lighting lamp	Head lamp	Four-lamp system	Sealed beam type
			Assembled type
		Two-lamp system	Sealed beam type
			Assembled type
		Single-lamp system	Sealed beam type
			Assembled type
	Fog lamp	Sealed beam type	
		Assembled type	
	Licence plate lamp	For large-sized licence plate	
		For medium-sized licence plate	
		For small-sized licence plate	
		For moped licence plate	
	Back-up lamp	For rear	
Signal and indicator lamp	Tail lamp	For rear	Single-lamp system
			Two-lamp system
			Three-lamp system
	Stop lamp	For rear	Single-lamp system
			Two-lamp system
			Three-lamp system
	High mount stop lamp	For rear	For interior
			For exterior
	Turn signal lamp	For front	
		For side	
		For rear	Single-lamp system
			Two-lamp system
			Three-lamp system
	Parking lamp	For front	
		For rear	
	Clearance lamp	For front	
	Side marker lamp	For front	
		For intermediate position	
		For rear	
Indicator	Reflex reflector	For front	
		For side	
		For rear	

3.2 Grade The grade of lighting and light signalling devices are designated as given in Table 2, according to the principal usage, performance, construction and function.

Table 2. Grade

Grade ⁽¹⁾		Principal usage (informative reference)
A	A1	Automobile of 6 m or more in overall length
	A2	
	A3	
B	B1	Automobile of under 6 m in overall length
	B2	
	B3	
C	C1	Two-wheeled vehicle (motorcycle and moped)
	C2	
	C3	

Note ⁽¹⁾ Symbol and numerical value given in grade designation mean the following:

A, B, C : principal usage

1, 2, 3 : classification by performance, construction and function. However, A3 and B3 are used for turn signal lamp only.

3.3 Nominal voltage The nominal voltage of lamp shall be 6 V, 12 V and 24 V.

4. Performance

4.1 Performance, construction and function The items of performance, construction and function applicable to lighting and light signalling devices shall be as shown by mark ○ in Table 3.

Table 3. Items of performance, construction and function

Class		Construction and function				Performance											Appearance	Marking
		Lamp unit or lamp bulb	Lamp base and lamp holder	Effective area of lens	Adjustment of optical axis	Luminous intensity distribution	Colour and chromaticity of lamp light and reflected light	Resistance of lens made of synthetic resin to weather	Resistance to heat	Resistance to vibration	Resistance to shock	Dustproof	Waterproof	Insulating property	Resistance to corrosion	Reflection property		
Head lamp ⁽²⁾		○	○	—	○	○	○	○	○	○	○	○	○	○	○	—	○	○
Fog lamp		○	○	—	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Licence plate lamp		○	○	—	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Back-up lamp		○	○	—	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Tail lamp		○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Stop lamp		○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
High mount stop lamp	For interior	○	○	○	—	○	○	○	○	○	○	—	—	—	—	—	○	○
	For exterior	○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Turn signal lamp		○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Parking lamp		○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Clearance lamp		○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Side marker lamp		○	○	○	—	○	○	○	○	○	○	○	○	○	○	—	○	○
Reflex reflector		—	—	○	—	—	○	○	○	○	○	○	○	—	○	○	○	○

Note ⁽²⁾ Performance items of sealed beam unit of head lamp shall comply with the provision specified in JIS D 5504.

4.2 Luminous intensity distribution The luminous intensity distribution of the lamp shall be tested in accordance with 7.2 and shall conform to Attached Tables 1 to 7.

4.3 Adjustment of optical axis The adjustment of optical axis of the head lamp shall be as follows:

- (1) Vertical direction 2.5° or more from the horizontal plane of lamp center in each of upper and lower directions.
- (2) Horizontal direction 2.0° or more from the vertical plane of lamp center in each of left and right directions, except the lamps for motorcycle and moped.

Screw part for adjustment shall be free from abnormality even if the adjustment is repeated 10 times on each screw.

4.4 Colour and chromaticity of lamp light and reflected light

4.4.1 Colour and chromaticity of lamp light The colour and chromaticity of lamp light shall fall within the chromaticity range given in Table 4, when measured in accordance with 7.3.1.

4.4.2 Colour and chromaticity of reflected light of reflex reflector The colour and chromaticity of reflected light from a reflex reflector shall fall within the chromaticity range given in Table 4, when measured in accordance with 7.3.2.

Table 4. Chromaticity range

Colour name		Red	Amber	Yellow	White
Class		$y \leq 0.335$ $z \leq 0.008$	$0.429 \geq y \geq 0.398$ $z \leq 0.007$	$y \geq 0.138 + 0.580x$ $y \leq 1.290x - 0.100$ $y \geq -x + 0.940$ $y \leq -x + 0.992$ $y \geq 0.440$	$0.500 \geq x \geq 0.310$ $y \leq 0.150 + 0.640x$ $y \geq 0.050 + 0.750x$ $0.440 \geq y \geq 0.382$
Head lamp		—	—	○	○
Fog lamp		—	—	○	○
Licence plate lamp		—	—	—	○
Back-up lamp		—	—	○	○
Tail lamp		○	—	—	—
Stop lamp		○	—	—	—
High mount stop lamp		○	—	—	—
Turn signal lamp	For front	—	○	—	—
	For side	—	○	—	—
	For rear	—	○	—	—
Parking lamp	For front	—	○	○	○
	For rear	○	—	—	—
Clearance lamp	For front	—	○	○	○
Side marker lamp	For front	—	○	—	—
	For intermediate	—	○	—	—
	For rear	○	—	—	—
Reflex reflector	For front	—	○	—	○
	For side	○	○	—	—
	For rear	○	—	—	—

Remarks: x , y , z in the table mean the chromaticity coordinates specified in JIS Z 8701. Mark ○ shows applicable lamps.

4.5 Resistance of lens made of synthetic resin to weather The resistance of the lens made of synthetic resin to weather shall fall within the chromaticity range in Table 4 when tested in accordance with 7.4.

4.6 Resistance to heat The resistance of lighting and light signalling devices to heat shall be that, when tested in accordance with 7.5, there shall not be the defect to impair the function such as softening of lens (in the case of the lens made of synthetic resin), crack, distortion, deterioration of luster, defective connection, short circuit and other harmful defectives.

4.7 Resistance to vibration The resistance of lighting and light signalling devices to vibration shall be that, when tested in accordance with 7.6, there shall not be deformation, loosening and crack of constructing member materials, breakage of filament ⁽³⁾, defective connection, short circuit and other harmful defectives.

Note ⁽³⁾ For the case of stage 7 specified in JIS D 1601, this is subjected to the agreement between the parties concerned.

4.8 Resistance to shock The resistance of lighting and light signalling devices shall be that, when tested in accordance with 7.7, there shall not be deformation and loosening of each part, rotation and fall down of lens, breakage of supporting parts, defective connection, short circuit and other harmful defectives (except breakage of filament).

4.9 Dustproof The dustproof of lighting and light signalling devices shall conform to the following items when tested in accordance with 7.8.

- (1) When measuring the maximum luminous intensity after the test, the lamp shall be that there is not decrease of luminous intensity by 10 % or more compared with that before the test.

This provision, however, does not apply to head lamp and sealed beam type fog lamp.

- (2) The reflex reflector shall not show any harmful adhesion of dust on its inside surface (effective reflecting surface), when tested in accordance with 7.8.

4.10 Waterproof The waterproof of lighting and light signalling devices shall be that, when testing in accordance with 7.9, there shall not be residual water of 2 ml or more inside. The reflex reflector shall be that the inside surface of lens (effective reflecting surface) is free from the generation of moisture.

4.11 Insulating property The insulating property of lighting and light signalling devices shall have an insulation resistance of at least 0.5 MΩ between its lead wire or terminal and the fitting metal part when tested in accordance with 7.10.

4.12 Resistance to corrosion Resistance to corrosion of lighting and light signalling devices shall be as follows:

- (1) Significant surface of plated equipment shall meet the criterion specified in 8.3 of JIS D 0201 when tested in accordance with 7.11 (1).

- (2) Significant surface of painted equipment shall meet the criterion specified in 3.5 of JIS D 0202 when tested in accordance with 7.11 (2).

4.13 Reflection property The reflection property of reflex reflector shall be not less than the relevant value given in Attached Table 8 when tested in accordance with 7.12.

5. Construction and function

5.1 Lamp unit, lamp bulb and its base and lamp holder The lamp unit, lamp bulb and its base and lamp holder shall comply with Table 5. However, if there are substitutional ones which are not specified in Table 5 but can keep the quality equal to or superior to the specified one in performance of lamp, fitting dimension precision, etc., they are allowed to be used.

Table 5. Lamp unit, lamp bulb and its base and lamp holder

Class	Type	Lamp unit or lamp bulb	Base and lamp holder
Head lamp	Sealed beam type	To comply with provision specified in JIS D 5504.	To comply with provision specified in JIS D 5504 or JIS C 7709.
	Assembled type	To comply with provision specified in JIS C 7506.	To comply with provision specified in JIS C 7709.
Fog lamp	Sealed beam type	Not specified specially.	Not specified specially.
	Assembled type	To comply with provision specified in JIS C 7506.	To comply with provision specified in JIS C 7709.
Licence plate lamp Back-up lamp Tail lamp Stop lamp High mount stop lamp Turn signal lamp Parking lamp Clearance lamp Side marker lamp	—	To comply with provision specified in JIS C 7506. Allowed to comply with provision specified in JIS C 7035 as well.	To comply with provision specified in JIS C 7709.

5.2 Effective area of lens The effective area of lens of the lighting and light signalling devices shall be calculated as follows and be as shown in Table 6.

- (1) The effective area of the lamp lens shall be the range through which the light from lamp bulb enters directly and indirectly through reflecting mirror or light inducting material. However, the area of reflex reflector existing within the effective area, machine screw for fitting existing in lens surface and accessory for decoration not passing light on lens surface, or the area of coated parts are excepted.

- (2) The effective area of the lens of reflex reflector shall be the range composed of reflection elements. However, the decorative accessory not passing light existing within the effective area or coated parts are excepted.

Table 6. Effective area of lens

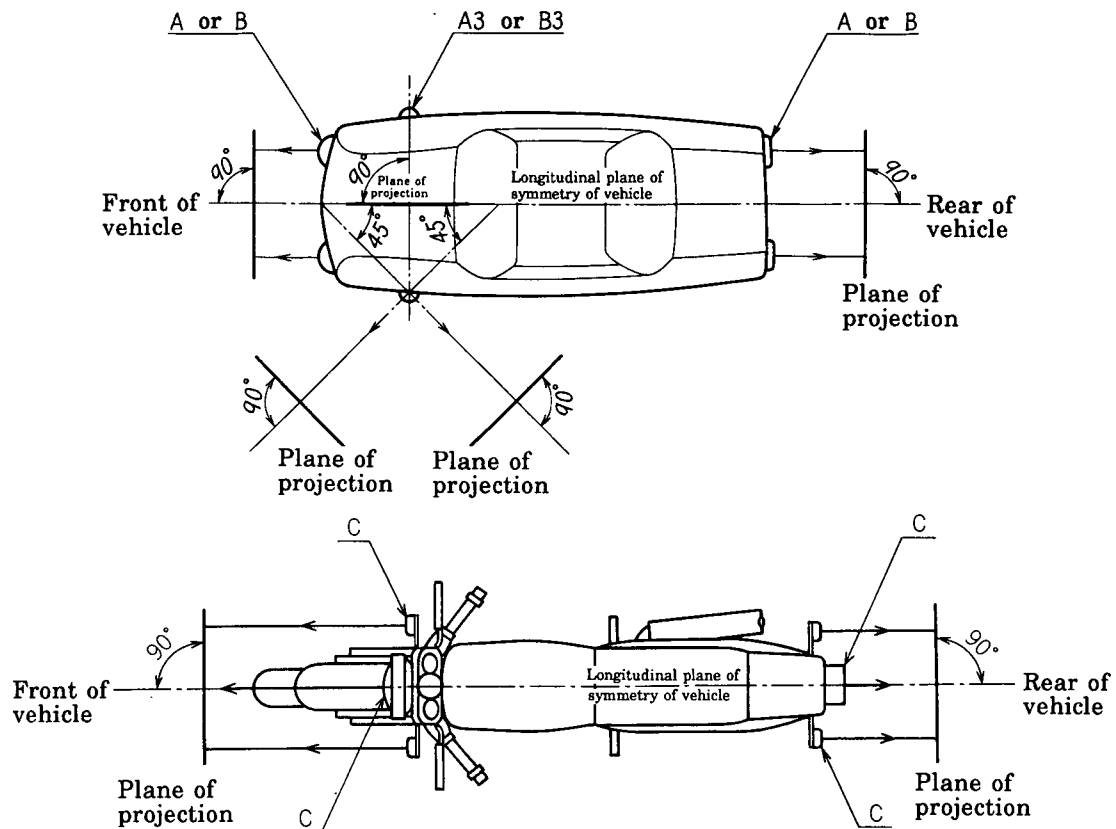
Class		Grade	Effective area cm ²	Plane of projection (4)
Tail lamp		A, B, C ⁽⁵⁾	15 min.	Vertical plane perpendicular to the longitudinal plane of symmetry of vehicle.
Stop lamp		A, B, C ⁽⁵⁾	20 min.	
High mount stop lamp		A, B	20 min.	
Turn signal lamp	For front For rear	A1, A2	40 min.	
		B1, B2	20 min.	
		C	7 min.	
	For side	A3	20 min.	Longitudinal plane of symmetry of vehicle and vertical plane which intersects the longitudinal plane of symmetry of vehicle at an angle of 45°.
		B3	10 min.	
Parking lamp		A, B, C ⁽⁵⁾	10 min.	Vertical plane perpendicular to the longitudinal plane of symmetry of vehicle.
Clearance lamp		A, B, C ⁽⁵⁾	15 min.	
Side marker lamp		A	10 min.	
Reflex reflector	For front	A, B	10 min.	Longitudinal plane of symmetry of vehicle.
	For side	A, B		
	For rear	A, B, C ⁽⁵⁾		Vertical plane perpendicular to the longitudinal plane of symmetry of vehicle.

Notes ⁽⁴⁾ An example of the direction of projection plane is shown in Fig. 1.

⁽⁵⁾ Lamps for moped are excluded.

- Remarks
1. To the calculation of effective area and the details for application to grade, the criteria or standard specifying otherwise may apply.
 2. The effective area of the reflex reflector for rear of trailer shall consist of an erect equilateral triangle or hollow erect equilateral triangle with 30 mm or more wide strips having a side of 150 mm or more.

Fig. 1. Projection



6. Appearance The appearance of lighting and light signalling devices shall be as follows:

- (1) The lamp lens and reflex reflector lens shall be free from such harmful defects as bubbles, wrinkles and distortion.
- (2) The surface of sheet packing shall be free from such harmful defects as conspicuous unevenness, wrinkles and fissures.

7. Test

7.1 Test condition The test of lighting and light signalling devices shall be as follows unless otherwise specified:

- (1) Reference lamp bulb By selecting from among the lamp bulbs or lamp units specified in 5.1, the lamp bulbs agreed between the parties concerned with delivery according to the types of lamp and having the values in shape, dimension and initial characteristic near extremely the median of each of their specified values shall be used. From the standpoint to attach importance to the median of luminous flux, it is allowed to make the median of specified luminous flux able to be obtained by changing the test voltage.
- (2) Required lamp bulb The lamp bulb agreed between the parties concerned with delivery shall be used by selecting, for each type of lamps, from among the lamp bulbs or lamp units specified in 5.1.