International Standard 7591

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Road vehicles — Retro-reflective registration plates for motor vehicles and trailers — Specification

Véhicules routiers — Plaques d'immatriculation rétroréfléchissantes pour véhicules à moteur et leurs remorques — Spécifications

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 7591 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in April 1981.

It has been approved by the member bodies of the following countries :

Austria	Iraq	Romania
Brazil	Italy	Spain
China	Japan	Sweden
Czechoslovakia	Korea, Rep. of	Switzerland
Egypt, Arab Rep. of	Netherlands	United Kingdom
Germany, F.R.	New Zealand	USA
Iran	Poland	USSR

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Belgium
France

Printed in Switzerland

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1 Scope and field of application

This International Standard specifies the provisions applicable to retro-reflective registration plates for motor vehicles and their trailers.

2 References

ISO 105, *Textiles — Tests for colour fastness.*

CIE Publication, *General recommendations for reflex-reflector photometry*; Proceedings 14th CIE session (Brussels, 1959), Volume D, pages 566-571.

3 Retro-reflective material

The retro-reflective outer background of the finished plate shall be flat and smooth. Where retro-reflection is achieved by means of an applied coating or sheeting, the retro-reflective material shall be applied to a corrosion resistant substrate to form a durable bond with the substrate and resist impacts and bending; the reflective material shall be embossable to a minimum height of 1 mm to form letters and digits in relief.

4 Specification compliance

Compliance with national regulations for dimensions, shape, letters and numerals shall be checked on a completely finished plate by the competent authorities.

Compliance with this specification shall be determined by laboratory testing of representative samples of the plates (see the annex).

5 Test samples

The sample plates shall be representative of current production, produced in accordance with the recommendations of the manufacturer of retro-reflective material. Test samples shall have a minimum area of 100 cm^2 of continuous flat background area to facilitate photometric measurements and other testing (see the annex). All test samples shall be conditioned for 24 h at 23 ± 5 °C and 50 ± 10 % relative humidity prior to testing.

6 Photometric properties

6.1 Minimum values of coefficient of retro-reflection

The retro-reflective area of the plate shall have, in a new condition, the minimum values of coefficient of retro-reflection expressed in candelas per lux per square metre ($cd.lx^{-1}.m^{-2}$), given in table 1 when illuminated with a CIE Standard Illuminant A and measured as recommended by the CIE with the entrance and observation angles in the same plane (see the CIE Publication referred to in clause 2). (The angular subtense of the sample shall not be larger than 80′.)

NOTE — The adjustment of the entrance angle shall be such that the entrance and observation angles are on opposite sides of the line joining the light source to the centre of the sample.

Table 1

Colour	Observation angle	Entrance angle			
		5°	30°	40°	Maximum
White	0° 12′	45	18	8	250
	0° 20′	30	12	6	
	1° 30′	3,5	2	0,7	
Yellow	0° 12′	30	12	5	250
	0° 20′	20	8	4	
	1° 30′	2,3	0,8	0,4	

When subjected to a simulated rainfall, the reflectivity of the retro-reflective surface of the plate shall not be less than 90 % of the values specified above.

6.2 Uniformity of retro-reflection

If local variations in luminance are apparent when a sample plate having a retro-reflective background, but no legend, is observed under retro-reflective viewing conditions, photometric measurements shall be made at an observation angle of 20′ and an entrance angle of 5° to check the amount of variation.

Relative measurements shall be made, in the region of the observed variation, of the coefficient of luminous intensity of several adjacent areas, each 5 × 5 cm. The ratio of the highest to the lowest reading shall not exceed 2.