

ARTICLE 37-02
SLOW-MOVING VEHICLE IDENTIFICATION EMBLEM

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CHAPTER 37-02-01
DESIGN AND SPECIFICATION

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37-02-01-01. Facing material.

The identification emblem (see Figure 1) consists of a fluorescent yellow-orange triangle with a dark red reflective border. The yellow-orange fluorescent triangle is for daylight identification. The reflective border defines the shape of the fluorescent color in daylight and becomes a hollow red triangle in the path of motor vehicle headlights at night.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-02. Visibility.

The emblem shall be entirely visible in daylight and at night from all distances between six hundred feet and one hundred feet [182.88 meters to 30.48 meters] from the rear when directly in front of lawful upper beam of headlamps.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-03. Color values.

The spectrophotometric color values of the yellow-orange fluorescent material shall have a dominant wave length of five hundred ninety to six hundred ten millimicrons and a purity of ninety-eight percent before test. After the durability test under section 37-02-01-08, the dominant wave length of the fluorescent material shall not change more than ten percent.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-04. Minimum reflective values.

The reflective material shall have minimum intensity values at each of the angles listed in this section. After the durability test under section 37-02-01-08, the minimum reflective intensity values for the reflective material shall not change more than twenty percent from the values specified in this section.

MINIMUM REFLECTIVE INTENSITY VALUES, R *

<u>Divergence</u> <u>Angle, degrees</u>	<u>Incidence</u> <u>Angle, degrees</u>	<u>Reflective</u> <u>Intensity, R</u>
0.2	0	10
0.2	15	7
0.2	30	5
0.5	0	5
0.5	15	4
0.5	30	2

* Measurements shall be conducted in accordance with photometric testing procedures for reflex-reflectors as specified in Society of Automotive Engineers Standard, SAE J594, Reflex Reflectors, and using fifty, plus or minus five square inches [322.6, square centimeters] of reflective material. The maximum dimension of the test surface shall not be greater than one and one-half times the minimum dimension. The reflective intensity (R) is computed from the equation.

$$R = \frac{(L_r) (d^2)}{(L_s) (A)}$$

Where:

R = reflective intensity, candlepower per incident foot-candle per square foot.

L_r = illumination incident upon receiver at observation point foot-candles

L_s = illumination incident upon a plane perpendicular to the incident ray at the test specimen position, foot-candles.

d = distance from test specimen to source of illumination one hundred feet (specified in SAE J594).

A = area of test surface, square feet.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-05. Material strength.

The reflective and fluorescent materials shall be tough, flexible, and of sufficient thickness and strength to meet the requirements of sections 37-02-01-02 through 37-02-01-10. After the durability test under section 37-02-01-08, the fluorescent and reflective material shall show no appreciable discoloration, cracking, crazing, blistering, loss of durable bond, or dimensional change.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-06. Backing material.

Backing material for portable emblems shall be equivalent to four-hundredths of an inch [1.016 millimeters] minimum thickness aluminum, 22 gage [.03 inches or 0.762 millimeters] minimum thickness mill-galvanized or coated sheet steel with the surface clean and receptive to a durable bond. The backing material shall be free of burrs. Any material equal to or superior to these requirements may be utilized.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-07. Testing standards.

The emblem shall be tested in conformance with the following sections from SAE J575, Tests for Motor Vehicle Lighting Devices and Components:

- Section B - Samples for Tests
- Section D - Laboratory Facilities
- Section E - Vibration Test
- Section H - Corrosion Test (pertains to face of emblem only)

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-08. Durability test.

Samples shall be exposed to the sun at an angle of forty-five degrees to horizontal and facing south per American Society for Testing and Materials, ASTM D 1014, Method of Conducting Exterior Exposure Tests of Paints on Steel.

DURABILITY TEST PERIODS

Location	Minimum Test Period, months:	
	Fluorescent	Reflective
Outside in Midwest or	12	24
outside in Miami, Florida	6	12

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-09. Replacement of fluorescent material.

The yellow-orange fluorescent material in the center of the emblem shall be replaced when not visible in normal sunlight for a distance of six hundred feet [182.88 meters]. The red fluorescent material shall be replaced when not visible at night for a distance of six hundred feet [182.88 meters] when directly in front of lawful upper beam of headlight.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50

37-02-01-10. Strength test.

Each test sample shall be dropped from a height of five feet [1.53 meters] to a smooth, hard surface equivalent to rigid metal or concrete. Each test sample shall be submitted to three drop tests:

corner drop, edge drop, and flat drop. Failure shall be considered to have occurred when the emblem will no longer meet requirements in section 37-02-01-03.

General Authority: NDCC 39-21-50

Law Implemented: NDCC 39-21-50