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DRAFT EAST AFRICAN STANDARD

Road marking paints — Specification

EAST AFRICAN COMMUNITY

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Foreword

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The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 070, *Paints, varnishes and related products*.

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

During the preparation of this Standard, reference was made to the following document:

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Acknowledgement is hereby made for the assistance derived from this source.

Road marking paints — Specification

1 Scope

This Draft East African specifies requirements, methods of sampling and test for solvent-borne and water-borne paints for marking on bituminous or concrete surfaces. It makes provision for white, yellow, black and any other colours as specified.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4618, *Paints and varnishes — Terms and definitions*

ISO 6503 *Paints and varnishes -- Determination of total lead -- Flame atomic absorption spectrometric method*

ISO 6504-3, *Paints and varnishes — Determination of hiding power — Part 3: Determination of contrast ratio of light coloured paints at a fixed spreading rate*

ISO 17132, *Paints and varnishes — T-bend test*

ISO 3251, *Paints varnishes and plastics — Determination of non- volatile matter content*

ISO 1514, *Paints and varnishes — Standard panels for testing*

ISO 1518-1, *Paints and varnishes — Determination of scratch resistance — Part 1: Constant-loading method*

ISO 1524, *Paints, varnishes and printing ink — Determination of fineness of grind*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

ISO 3270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

ISO 3856-6 *Paints and varnishes -- Determination of "soluble" metal content -- Part 6: Determination of total chromium content of the liquid portion of the paint -- Flame atomic absorption spectrometric method*

ISO 9117-1:2009 *Paints and varnishes -- Drying tests -- Part 1: Determination of through-dry state and through-dry time*

3 Terms and definitions

For the purposes of this standard, the definitions given in ISO 4618 and the following shall apply:

3.1

luminance factor

the ratio of the luminance of a non-luminous body, under specified conditions of illumination and observation, to the luminance of a perfect reflecting diffuser receiving the same illumination.

3.2

no pick-up time

The period, determined by the procedure described in Annex C, between application of a paint and the moment when the paint just ceases to be removed by a simulated tire of a vehicle passing over the painted surface.

3.3

reflectorization

The application of small transparent glass beads on to a painted surface before it has dried, to enable incident light to be reflected back in the general direction of the source.

3.4

defective

test sample or a container of the paint that fails in one or more respects to comply with the relevant requirements of this standard

3.5

lot

quantity of paint in containers that bear the same batch identification, from one manufacturer and submitted at any one time for inspection and testing

3.6

reflectivity

reflectance of a paint film of such thickness that any further increase in film thickness does not give further change in the reflectance

3.7

retro-reflective paints

paints that have an enhanced night-time visibility, achieved by the incorporation of suitable glass beads

3.8

standard atmosphere

atmosphere contained in a test and conditioning enclosure, and that complies with the requirements of ISO 3270.

3.9

bleeding

is defined as the relative condition of discoloration manifested in traffic paint when applied to tar or asphaltic roads

4 Types

The paints shall be of the following types, as required:

type 1: water-borne

type 2: Solvent -borne

5 Requirements

5.1 General requirements

5.1.1 Condition in the container

The paint shall show no evidence of; biological growth, corrosion of the container, livering or hard settlement, and shall be free from lumps, foreign material or surface skins that cannot be re-dissolved. Upon mixing the paint shall be returned to a smooth and homogeneous consistency, which is free from; gel structures, persistent foam or air bubbles.

5.2 Specific requirements

The paint shall meet the requirements specified in Table 1.

Table 1 — Specific requirements for road marking paints

Sl. No.	Characteristic		Requirement								Test method
			Water borne				Solvent borne				
			White	Yellow	Black	Other colours	White	Yellow	Black	Other colours	
i	Total Lead Content, max		90 ppm								ISO 6503
ii	Luminance factor, %.		83,min.	48-52	Not applicable	To be determined	83,min.	48-52	Not applicable	To be determined	Annexe B
iii	Hiding Power, %, min		90	80	–	–	90	80	Not applicable	To be determined	ISO 6504
iv	No Pick-up Time, minutes, max.		30								Annex C
v	Flexibility		Shall comply								ISO 17132
vi	Resistance to Bleeding		Shall comply								Annexe E
vii	Resistance to diesel fuel		Shall comply								Annex F
viii	Resistance to salt solution		Shall comply								Annex G
ix	Solids content, %,m/m, min.		50								ISO 3251
x	Fineness of dispersion,/Fineness of grind Hegman-Type Gage,µm,max		25								ISO 1524
xi	Drying time at 25 °C ± 2 °C,hrs	Hard drying	24, max								ISO 9117-1
		Surface drying	1-3								ISO 9117-3
xii	Chromium, mg/kg in dried paints, max		5								ISO 3856-6

5.3 Road performance requirements

5.3.1 General

In addition to complying with the laboratory tests specified in table 1, the paint shall comply with the appropriate performance requirements specified in this clause.

The paint sample applied to the road surface for the purposes of **table 1** shall be in the same condition (e.g. not thinned) as the sample used for the laboratory tests .

Details of the procedures for and control of road performance tests are given in Annex H.

NOTE Clause 5 gives requirements for the conduct of the road performance trials and explains that the trials can only be carried out for white paints.

5.3.2 Luminance Factor

When the paint, applied to the road surface as described in **H.2.6** and examined as described in **H.2.7**, is tested as described in **8.3.2**, the luminance factor for the test area on each non-reflectorized stripe shall be not lower than 70 per cent on the day of application of the paint and not lower than 60 per cent at each of the regular inspection intervals thereafter.

5.3.3 Degree of Erosion

When the paint, applied to the road surface as described in **H.2.6** and examined in accordance with **H2.7**, is tested as described in Annex J, the total wear index for the test area on each stripe shall not exceed 35 % at each of the regular inspection intervals of six months.

5.3.4 Spread of Markings

When the paint, applied to the road surface as described in **H.2.6**, is examined in accordance with **H2.7**, the width of each non-reflectorized paint strips, measured between 600 mm and 900 mm from the near side kerb, shall not have increased, at each of the regular inspection intervals, by more than 10 per cent of its initial value.

5.4 Storage stability

The paint, after storage at temperatures in the range 4 °C to 32°C in unopened containers for not less than 12 months from the date of dispatch by the manufacturer, shall comply with **table 1**

6 Road performance trials

The procedures for the control of the testing of pavement marking paints for compliance with **table 1** shall be carried out at a trial site under the direction of a supervising authority.

Only white paints complying with **table 1** are acceptable for road performance trials. However, provided that the formulation of a yellow or black paint differs from that of a white paint in respect of the pigmenting ingredient only, the results of a trial on the white paints shall apply to the yellow or black paint complying with **table 1**

7 Packaging and labelling

7.1 Packaging

The road marking paint shall be packaged in a suitable container that prevents it from deterioration during storage, transportation and normal handling.

7.2 Labelling

7.2.1 The labelling shall be either in English, Kiswahili or French or in combination as agreed between the manufacturer and / or the supplier. Any other language is optional.

7.2.2 Each container shall be legibly and indelibly marked with the following information.

- a) the words “ road marking paint;
- b) name and address of the manufacturer;
- c) net contents in litres;
- d) type of paint
- e) date of manufacture
- f) best before date ;
- g) colour of the paint;
- h) instructions for use, disposal and safety requirements.
- i) batch number.

8 Sampling

Sampling shall be done in accordance with ISO 15528.

Annex A
(normative)
Test panels

A1 Materials, dimensions and preparation

The test panels shall be of metal or glass and shall comply with ISO 1514. The test panels shall be flat and free from distortion and shall be free from visible ridges or cracks.

Metal test panels shall be rectangular, 150 mm x 100 mm in area and shall be prepared as described ISO 1514. Glass test panels shall be 150 mm x 100 mm x 5 mm in size and shall be prepared by solvent cleaning.

A2 Paint application

Prepare the paint sample in accordance with **A.3** Except where otherwise specified in this standard, apply the paint to the test panel to give a wet film thickness of $350 \pm 35 \mu\text{m}$, using shims and a doctor blade. Allow the panel to dry for 7 days in horizontal position at $23 \text{ }^{\circ}\text{C} \pm 2 \text{ }^{\circ}\text{C}$ and $50 \% \pm 5 \%$ relative humidity, out of direct sunlight and with adequate protection from the deposit of dust.

A3 Test conditions

Except where otherwise specified in this standard, tests shall be carried out at $23 \text{ }^{\circ}\text{C} \pm 2 \text{ }^{\circ}\text{C}$ and $50 \% \pm 5 \%$ relative humidity.

Anne B (normative)

Determination of luminance factor

B1 Principle

The principle of the method is photoelectric comparison of the luminance of the test paint relative to that of a perfect reflecting diffuser. In this standard, magnesium carbonate or a white tile, calibrated against a perfect reflecting diffuser, is used as the reference surface.

B2 Apparatus and materials

B2.1 Light source, a tungsten lamp operating at a correlated colour temperature of 2 854 K in a photometer.

B2.2 Photoelectric cell, having a spectral sensitivity closely matched to the CIE photopic luminous efficiency function $V(\lambda)$.

B2.3 Magnesium carbonate block, calibrated against a perfect reflecting diffuser. Prepare a new surface immediately before use.

B2.4 Calibrated white reference tile, having a CIE value in the range 70 to 95, and a calibration against a perfect reflecting diffuser traceable to a national accredited laboratory.

B2.5 Glass test panel, as described in Annex A (for Method 1 only)

B3 Procedure

B3.1 Method 1: Test panels

B3.1.1 Prepare the glass test panel (**B2.5**) and apply the paint by the method described in Annex A.

B3.1.2 Calibrate the apparatus with the light source (**B2.1**), with the axis of the incident beam at $45^\circ \pm 1^\circ$ to the reference surface (**B2.3** or **B2.4**). Locate the photoelectric cell (**B2.2**) such that the axis of the cell is at $90^\circ \pm 1^\circ$ to the illuminated reference surface. If using a magnesium carbonate block, calibrate on the mean of readings from three different areas.

B3.1.3 Calculate the absolute value M by use of the appropriate calibration factor.

B3.1.4 Measure the luminance of three different areas of the paint film using the same geometry as in B4. Calculate the mean luminance L .

B3.2 Method 2: Road trials

B3.2.1 Clean an area of each non-reflectorized paint stripe (prepared as described in **H2.6**) at a distance of 500 mm \pm 75 mm from the near side kerb, by the method described in **J2.1**, and allow to dry.

B3.2.2 Taking precautions to shield the photoelectric cell from stray incident light, carry out the procedure described in **B3.1.2** and **B3.1.3**, but measure the luminance at only one location on the paint stripe. Measure the luminance five times, rotating the cell through approximately 72° with minimal lateral displacement between each measurement. Calculate the mean L of the five measurements.

B4 Calculation

Calculate the luminance factor as the ratio L/M and express it as a percentage.

B5 Test report

The test report shall state the luminance factor L/M to the nearest 1 %.

Annex C

(normative)

No pick-up time test

C1 Principle

Two rubber rings, simulating the tyres of a vehicle, are rolled over a test panel 15 min after application of the paint. The surfaces of the rings are examined for pick-up of the paint.

C2 Apparatus and materials

C2.1 Steel cylinder, fitted with two replaceable O-rings (C2.2) and with a steel rod serving as an axle. The total mass of the assembly, complete with O-rings, shall be $5.40 \text{ kg} \pm 0.03 \text{ kg}$. The dimensions of the steel cylinder shall be in accordance with Figure C.1, subject to a tolerance of $\pm 0.1 \text{ mm}$.

C2.2 O-rings, made of synthetic rubber or rubber-like material. The dimensions of the O-rings shall be:

- a) Outside diameter: 104.8 mm;
- b) Inside diameter: 85.7 mm;
- c) Cross section: 9.5 mm.

C2.3 Ramp, having dimensions in accordance with Figure C.1, subject to a tolerance of $\pm 0.1 \text{ mm}$.

C2.4 Glass test panel, 100 mm x 200 mm in area, and 3 mm in thickness, as described in Annex A.

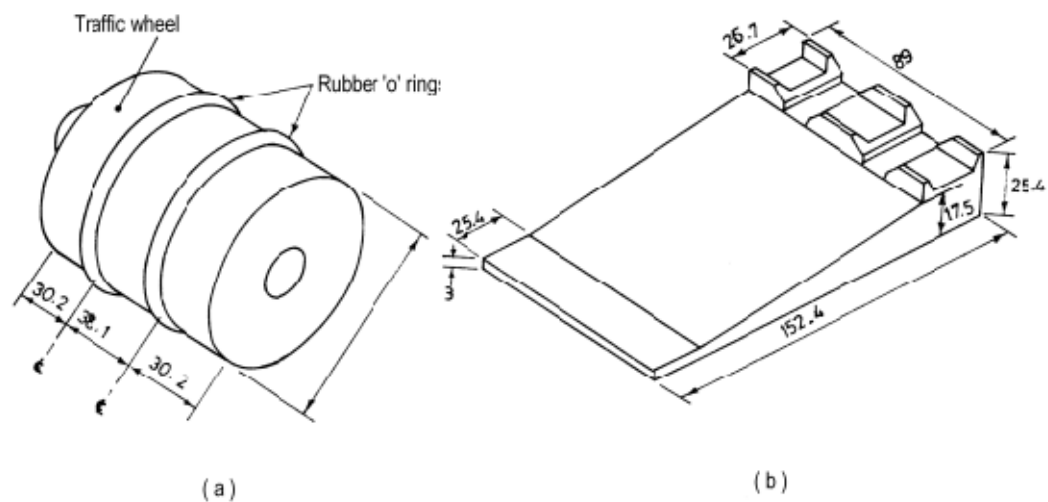
C3 Procedure

Carry out the test at a temperature of $23 \text{ }^{\circ}\text{C} \pm 2 \text{ }^{\circ}\text{C}$ and $50 \pm 5 \%$ relative humidity. Prepare the glass test panel (C2.4) by the method described in Annex A to give a film of width not less than 75 mm. Record the time of application.

Put the painted glass panel against the ramp (C2.3) and 30 min after the application of the paint; allow the steel cylinder (C2.1) to roll freely down the inclined ramp and over the paint film. Examine the rubber O-rings on the cylinder and record whether any of the paint is adhering to them.

C4 Test report

The test report shall state whether paint adhered to the O-ring after 30 min of application.



NOTE All dimensions are in millimetres and are to a tolerance of ± 0.1 mm.

Figure C.1 — Apparatus for no pick-up time test

Annex D (normative) Determination of resistance to grit abrasion

D1 Principle

Grit is allowed to impinge on the paint film and the paint is examined for damage.

D2 Apparatus and materials

D2.1 Angular steel grit, grades G 20 or G 24. The grit shall pass through a 1.18 mm aperture sieve and shall be retained on a 600- μ m aperture sieve.

The 2.25 kg of grit needed for the test shall be renewed after a total of 24 passes.

D2.2 Funnel, of sufficient capacity to contain 2.25 kg of the grit (D2.1) and with an orifice diameter of 16 mm attached to a straight tube of 16 mm internal diameter. The tube is fitted with a shutter with an aperture diameter of 16 mm immediately below the funnel and 1.25 m from the open end of the tube (see Figure D.1).

D2.3 Stand, for holding the funnel and tube attachment (D2.2) in a vertical position.

D2.4 Stand, suitable for holding a test panel at an angle of $45^\circ \pm 5^\circ$ to the horizontal.

D2.5 Glass test panel, as described in Annex A.

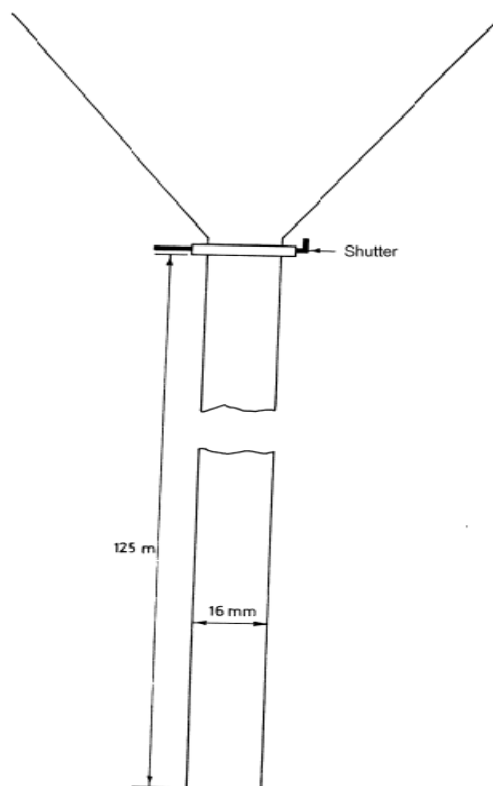


Figure D.2 — Abrasion test apparatus

D3 Procedure

Prepare the glass test panel (D2.5) by the method described in Annex A. Secure the panel at an angle of $45^{\circ} \pm 5'$ to the horizontal by means of the stand (D2.4). Place the funnel (D2.2) in the stand (D2.3) in such a manner that the tube is vertical and the bottom of the tube is 25 mm from the paint film and not less than 25 mm from the edge of the test panel.

Close the shutter and place 2.25 kg of the grit (D2.1) in the funnel. Open the shutter fully and rapidly to allow the grit to fall down the tube in a continuous stream and impinge on the paint film.

Remove the panel after three passes of the grit and examine by normal corrected vision the area of impact of the grit.

D4 Test report

The test report shall state whether the substrate is visible through the paint.

Annex E (normative) Determination of resistance to bleeding

E1 Principle

The paint is applied to a bitumen surface and the film is examined for dis-colouration after conditioning for 72 h.

E2 Apparatus and materials

E2.1 Bitumen, of grade 50 pen. The quantity taken should be sufficient to fill the metal tray (E2.2) to a depth of at least 6 mm.

E2.2 Metal tray, of minimum size 150 mm x 200 mm x 6 mm. The walls of the tray should be of uniform height.

E2.3 Hotplate, capable of maintaining a temperature of $175^{\circ}\text{C} \pm 10^{\circ}\text{C}$.

E2.4 Straightedge, of steel and of minimum length 200 mm.

E2.5 Steel shims, $350\text{ }\mu\text{m} \pm 50\text{ }\mu\text{m}$ thick.

E3 Procedure

Place the bitumen (E2.1) in the metal tray (E2.2) and, using the hotplate (E2.3), heat the bitumen to $175^{\circ}\text{C} \pm 10^{\circ}\text{C}$. When the bitumen is molten, spread it with the straightedge (E2.4) to give a smooth surface, level with the walls of the tray. Allow the bitumen to cool and condition it at a temperature of $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for 24 h.

Secure a strip of transparent tape of width not less than 50 mm across the bitumen surface, approximately 25 mm from and parallel to the 200 mm side. Place two steel shims (E2.5) not less than 50 mm apart on the bitumen surface. With the aid of a doctor blade, apply a film of the paint across the tape and over the bitumen surface with one pass of the blade. Allow the paint film to dry in a horizontal position at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 50 % \pm 5 % relative humidity for 72 h.

Determine the luminance factors of the paint film both on the bitumen and on the transparent tape, using the procedure described in B3.1.2 and B3.1.3.

The test report shall state the difference between the luminance factors of the paint films on the bitumen and transparent tape.

E4 report

The luminance factor of the paint applied to the bitumen shall not be reduced by more than 3 units below the percentage value of the paint applied to the transparent tape.

Annex F
(normative)
Determination of resistance to diesel fuel

F.1 Principle

The paint, after application to a mild steel test panel is immersed in a bath of diesel fuel for 1 h. The paint film, after a recovery period of 1 h, is assessed for a resistance to scratch using a 1-kg load. After further recovery period of 3 h, the paint film is assessed for luminance factor and blistering.

F2 Materials

F2.1 Diesel fuel

F2.2 Absorbent paper

F2.3 Mild Steel test panels, as described in Annex A.

F3 Procedure

Prepare two mild steel panels (F2.3) by the method described in Annex A, but allow to dry for 72 h only. Carry out, with one of the test panels, procedure A as described in ISO 1514, , immersing the panel in the diesel fuel (F2.1) for 1 h. Remove the panel from the diesel fuel and dry with the absorbent paper (F2.2).

Allow a recovery period of 1 h and then carry out the scratch test procedure described in ISO 1518 using a load of 0.8 kg. Examine the film for penetration to the substrate using normal or corrected vision and without magnification and report the result.

Allow a further recovery period of 3 h and, with normal or corrected vision, examine the paint film for signs of blistering using the non-immersed film for comparison and report any deterioration. Determine the luminance factors of the paint films, using the procedure described in B3.1.2 and B3.1.3.

The test report shall state whether penetration of the costing to the substrate has occurred after the scratch test and the difference in luminance factors of the immersed and non-immersed paint films. Report whether blistering has occurred.

F4 Test report

The following shall be reported

- a) There shall be no penetration by the needle through the coating to the substrate; and
- b) After the further recovery period of 3 h, there shall be no signs of blistering in comparison with the non-immersed paint film, and the luminance factor shall be not reduced by more than 3 units from the percentage value for the paint.

Annex G
(normative)
Determination of resistance to salt solution

G1 Principle

The paint is applied to a mild steel test panel, which is subsequently immersed in a saline solution for 10 h. The resistance to scratch of the film is assessed immediately and, after a recovery period, the film is assessed for changes in other properties.

G2 Apparatus and materials

G2.1 Sodium chloride solution, 20% (m/m).

G.2.2 Absorbent paper

G2.3 Mild steel test panels, as described in Annex A.

G3 Procedure

Prepare two mild steel panels (G2.3) by the method described in ISO 1514 but allow to dry for 72 h only.

Carry out, with one of the test panels, procedure A as described in ISO 1514, immersing the test panel in the sodium chloride solution (G2.1) for 18 h. Remove the panel from the solution and dry with the absorbent paper (G2.2).

Allow a further recovery period of 3 h and, with normal or corrected vision, examine the paint film for signs of blistering using the non-immersed film for comparison and report any deterioration. Then determine the luminance factors of the paint films, using the procedure described in B3.1.2 and B3.1.3.

The test report shall state whether any penetration of the sodium chloride solution has occurred and the difference in luminance factors of the immersed and non-immersed paint films.

G4 report

The following shall be reported

- a) There shall be no penetration by the needle through the coating to the substrate; and
- b) After the further recovery period of 3 h, there shall be no signs of blistering in comparison with the non-immersed paint film, and the luminance factor shall be not reduced by more than 3 units from the percentage value for the paints

Annex H
(normative)
Information on road performance trials and their control

H1 General

The road performance trials specified in clause 6 are required to be carried out under the direction of a supervising authority.

H2. Pre-conditions and procedures

H2.1 Frequency

Road performance trials shall not be carried out more frequently than once annually. If, in any year, the number of paint samples that are submitted and accepted for testing is insufficient, in the opinion of the conformity assessment body to justify the road trial and the concomitant disruption of traffic at the test site, the trial will not take place during that year.

H2.2 Duration

The road performance trial will have duration of 12 months.

H2.3 Location

The site for the road performance trials is selected by conformity assessment body

H2.4 Applicants

Manufacturers or other applicants wishing to submit samples of paint or paints for testing in the road performance trials are required formally to notify the supervising authority. The notification is to state the number of paints being submitted to the trial.

H2.5 Samples

Sufficient quantities of paint are required to be supplied to the supervising authority to enable samples to be selected at random. The paint supplied is required to have the same batch number as the samples submitted to the laboratory tests specified in **table 1**.

H2.6 Paint Application

The road surface is required to be free from moisture and loose particles. The paint will be applied when the air temperature is between 10 °C and 25 °C with relative humidity not greater than 85 % and when the road surface temperature is less than 40 °C.

The paint will be applied by commercial striping equipment to give a stripe having a wet film thickness not greater than 400 µm if the average texture depth is not greater than 1.5 mm or a stripe having a wet film thickness not greater than 600 µm if the average texture depth is greater than 1.5 mm. A test panel will be placed on the highway and will be painted during each pass of the equipment and immediately used to measure and verify the wet film thickness.

Only one pattern of stripes will be used throughout a road performance trial. Each stripe will be 100 mm ± 10 mm in width, on the left-hand lane of the carriageway and transverse to the length of the carriageway. The paint will be applied in duplicate on the surface.

The examination procedures (see **H.2.7**) will, however, be only carried out on one stripe of each pair. The additional test stripes will be reserved for evaluation if, in the opinion of the assessors, the test stripe has been damaged by external agencies, other than natural ageing or wear, to an extent which precludes its fair assessment.

The test site will not be opened to traffic until all the painted surfaces have dried for 30 min.

H2.7 Examination procedures

The supervising authority shall superintend the application of the paints. A panel of assessors will be appointed by the supervising authority and shall verify that such paint is applied as described in **H.2.6**. After allowing the applied paint to dry for a minimum of 30 min the assessors shall evaluate one of each pair of duplicate stripes for compliance with clause 6. The width of each non-reflectorized paint stripe measured between 600 mm and 900 mm from the near side kerb will be recorded to the nearest millimetre.

At the regular inspection intervals of 6 months and 12 months following the initial application, a panel of five assessors with the same representation as above will evaluate each stripe for compliance with clause 6.

NOTE Each area used for the assessment of erosion should be photographed for future reference in the case of dispute.

H2.8 Removal of markings

At the completion of each road performance trial, if required to do so by the local highway authority, the supervising authority will arrange for the markings to be removed without damage to the carriageway surface and to the satisfaction of the local highway authority.

H2.9 Test report

At the completion of the road performance trial, the supervising authority will prepare a test report for each paint, which will include the following information:

- a) The type and identification of the product tested;
- b) The intended duration of use;
- c) The location of the test site;
- d) The pattern of markings;
- e) The road surfaces, i.e bituminous and concrete;
- f) The conditions at time of application;
 - i) air and road temperature;
 - ii) weather;
- g) The method of application and the wet film thickness of the paint;
- h) The method of application and the wet film thickness of the paint;
- i) The date of application of the paint and duration of the test;
- j) Any deviation, by agreement or otherwise, from the procedure specified in this standard;
- k) The performance of the paint with reference to the requirements specified in **clause 6** at each of the inspection visits.

Annex J (normative) Determination of degree of erosion

J1 Principle

Erosion of the surface of each of the paint stripes is assessed by reference to a rating system from which a 'Wear Index' may be determined.

J2 Procedure

J2.1 Preparation of test area

Mark on each of the reflectorized and non-reflectorized strips the extremes of the test area, which shall be 750 mm \pm 50 mm and 1250 mm \pm 50 mm, measured from the near side kerb.

Thoroughly wet the test area with one litre of clean water and, using a brush, brush the area evenly to dislodge superficial dirt. Rinse the area with a further one litre of clean water and remove the surface water with a soft sponge.

J2.2 Assessment of wear

J2.2.1 On-site assessment

Immediately after preparing each test area, position the test grid as shown in figure J 1 Assess the degree of paint erosion of each of the 20 grid squares according to the ratings as defined in Table J.1 and record the number of squares in each grade. (The tabular form shown in Table J.2 is recommended.)

Table J.1—Assessment of rating of grid squares

Grade	Area of paint remaining	Weighting factor
a	Greater than or equal to 75 %	X 1
b	Greater than or equal to 50 % and less than 75%	X 2
c	Greater than or equal to 25 % and less than 50 %	X 3
d	Less than 25 %	X 4

Table 4. Specimen 'wear index' table

Grade	Number of squares	Weighting factor	Wear index
a		X 1	
b		X 2	
c		X 3	
d		X 4	
	Total: 20		Total:

If skid marks or other non-erosion characteristics make it difficult in the opinion of the assessors to obtain an assessment of a grid square, ignore the affected square and, after recording the results of those squares which can be assessed, the grid shall be moved to include new squares in order to bring the total number up to 20. Up to eight new squares may be used in the position and sequence given in Figure J 2 but assess only one new square for each square that cannot be assessed with the grid in the original position.

Calculate the 'wear index' by multiplying the number of squares in each grade by the respective weighting factor for that grade and add together the four subtotals to give the total 'wear index'. Compare the results of the five assessors and discard the highest and lowest results and calculate the mean of the remaining results.

If the value of the mean is in excess of 35 carry out the procedure described in J2.2.2. If the value of the mean is not in excess of 35, report the values obtained from the on-site assessment as the total 'wear index'.

J2.2.2 Measurement on photographs

Photograph the test area with grid in position with a 35-mm camera using a 50-mm lens and monochromatic film. Hold the camera on a tripod at a distance between 750 mm and 800 mm above the test area.

Enlarge the photograph of the test area of the marking to half actual size. Assess the area of marking remaining within each of the 20 grid squares as depicted in the enlarged photograph with area analysis equipment, which is based on the magneto scription technique.

Trace with the stylus of the equipment around each area of eroded marking; that is, those areas, which are not substantially, white, within each of the 20 grid squares. Calculate the percentage of marking remaining within each grid square using the relationship 100- (% eroded). Grade each of the grid squares as defined in Table 3 and record the number of squares in each grade. (The tabular form shown in Table 4 is recommended). Calculate the total 'Wear Index' as described in **J2.2.1**.

Report the value obtained from the measurements made on the photographs as the total 'Wear Index'.

Nearside kerb

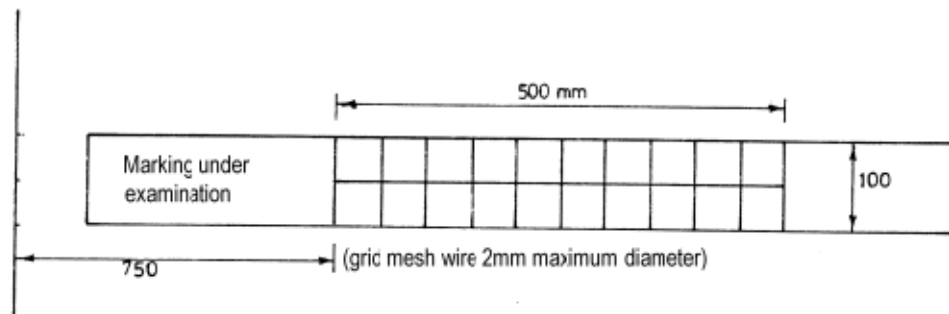
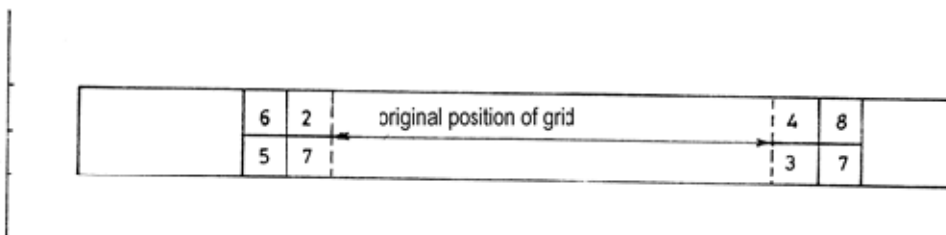


Fig. J1 The location of the test grid on a road marking (each grid square is approximately 50 mm × 50 mm).



Additional squares shall be used in the sequence given.

- b) The location of additional grid squares.

Figure J.2— positioning of the test grid for assessment of degree of erosion

J.3 Report

The test report shall state the following information:

- the results of each of the five assessors (see H2.7) and the mean result (see J2.2.1).
- the result of the photographic assessment (J2.2.2), if appropriate.

Bibliography

- [1] KS 162:1992, *Specification for road marking paints*

