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Road marking materials - Requirements for factory production control

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Road marking materials - Requirements for factory production control

Produits de marquage routiers - Exigences pour le contrôle de la production en usine

Straßenmarkierungsmaterialien - Anforderungen an die werkseigene Produktionskontrolle

This European Standard was approved by CEN on 7 March 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 226 "Road equipment", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2001, and conflicting national standards shall be withdrawn at the latest by September 2003.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the requirements for factory production control (FPC) of road marking materials when the manufacturer wishes the products to bear the EC conformity marking.

This European Standard also gives guide for the manufacturer and the certification bodies involved with the factory production control of road marking materials. It specifies which types of test have to be taken into consideration within the FPC but, as usual in third-party assessment and surveillance of quality systems, it leaves the precise methods to be applied to be dependent on the characteristics of the manufacturer's installation and production methods. The precise parameters and methods will be found in the written procedures agreed between the manufacturer and the third party responsible for the initial assessment of the FPC.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated into it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1423
Road marking materials – Drop on materials – Glass beads, antiskid aggregates and mixtures of the two

3 Terms and definitions

For the purposes of this European Standard the following terms and definitions apply.

3.1
reference sample
sample, labelled and stored for some period of time, to be used in case additional testing or verification is needed

3.2
batch
amount of product produced as one complete operation not being part of a continuous process

3.3
production run
amount of product realised as part of a continuous production process

4 General requirements for factory production control

4.1 General

The manufacturer shall exercise a permanent FPC, including a quality system certified by a third party.

The manufacturer shall be responsible for organizing the effective implementation of the FPC system. Tasks and responsibilities shall be documented and this documentation shall be kept up-to-date.

In each factory, the manufacturer may delegate the action to a person who shall have the necessary authority to:

- Identify procedures to demonstrate conformity of the product at appropriate stages;
- Identify and record any instance of non-conformity;
- Identify procedures to correct instances of non-conformity.

The manufacturer shall implement these procedures and instructions and record the operations and results. The results shall be used to correct the effects of any deviations and where necessary, treat any resulting non-conformity and, if required, to revise the FPC system to rectify the cause of non-conformity.

A manufacturer having a quality system conforming to the EN ISO 9000 family of standards, and which addresses the requirements of the appropriate harmonized standards for the road marking materials, is recognized as satisfying the FPC requirements of this standard.

4.2 Production control system

This quality system shall at least include the necessary procedures for:

- The control of raw materials;
- The control of dosage and mixing equipment;
- The control of the necessary installations, equipment and trained personnel to execute the tests on the raw materials, the tests during production and the final quality control tests;

- The test methods to be applied and the tolerances for the results of all the tests used are to be laid down in the quality system of the manufacturer. The appropriate calibrations shall be carried out on defined measuring and testing equipment.

4.3 Quality records

The quality records shall include everything that is necessary to ensure the traceability and all results of tests executed to control the raw materials, to control the production process and the final product.

NOTE Traceability includes the recording of to whom products or batches were first sold.

In case of non-conformity the actions taken shall be recorded.

4.4 Treatment of non-conformity

If the result of any test shows that the product does not meet the relevant requirements, the necessary action shall be taken. Products or batches not conforming shall be isolated and properly identified.

If the non-conformity can be corrected, once the fault has been corrected the necessary verification shall be repeated.

4.5 Raw materials

The manufacturer shall draw up and keep up-to-date documented procedures and instructions for:

- the quality control and testing of supplied materials;
- the use of the relevant materials from 'approved suppliers';
- the use of the premix glass beads;
- the production of mixtures of drop-on materials from only certified (e.g. a quality system in accordance with EN ISO 9001:1994 or EN ISO 9002:1994 and a third party type approval of products to EN 1423) glass beads and anti-skid aggregates.

4.6 Final Testing

The minimum frequency of final testing for each product shall be as designated in clause 5.

NOTE 1 If a manufacturer operates a certified quality system (e.g. EN ISO 9002:1994 or EN ISO 9001:1994). An alternative frequency, based upon statistical observations, may be agreed with the certifying third party.

All laboratory tests included in the initial type testing procedure, wear simulators excluded, shall be executed on the final product at a frequency specified in the quality system of the manufacturer, and at least once in every period of 12 months with production.

NOTE 2 For products that are produced only periodically, with intermediate periods of more than 12 months, these tests should not be executed in the periods of 12 months or more without any production for that product.

If products have been delivered before all the results of testing are available, a procedure and record shall be maintained for notifying customers. If the results show a non-conformity a recall procedure should be provided in that case.

4.7 Reference sample

When the final testing is successful a sample shall be labelled and stored as a reference sample for at least one year after production.

4.8 Handling and storage

The manufacturer shall ensure that handling and storage do not damage the products and that the products remain in conformity with the specifications of the appropriate harmonized standard.

The identification of stored and delivered products shall provide the necessary information for traceability, including batch numbers and date of production. In case of delivery in bulk, the system shall provide a suitable method for traceability.

5 Specific requirements

5.1 Paint

The final quality control testing shall include at least the following.

For every batch:

- solids content;
- viscosity;
- density;
- no pick-up time.

The reference sample shall be at least of 0,5 l.

5.2 Thermoplastics

The final quality control testing shall include at least every 10 000 kg and at least once a day for each type of product:

- softening point, indentation or viscosity at a given temperature;
- ash content or binder content.

The reference sample shall be of at least 1 kg.

5.3 Cold plastics

The final quality control testing shall include at least the following.

For every batch or at least every 10 000 kg in case of a continuous production system:

a) on each liquid component:
- density;
- viscosity.

b) and on the mixed components:

- no pick-up time;
- pot life (only when this is a requirement of the product).

The reference sample shall consist of the necessary quantity of each of the components, in order to make at least 0,5 l of the final mix.

NOTE Some components may deteriorate over a period of time. Care should be taken over the length of the storage.

5.4 Drop-on materials and premix glass beads

The final quality control testing executed by the manufacturer of the materials shall include at least the following.

a) For a representative sample of each batch and at least every 5 000 kg of drop-on materials or of premix glass beads:

- granulometry;
- defective beads (beads quality);
- refractive index (for high index glass beads only);
- surface treatment.

a) For a representative sample of anti-skid-aggregates:

- colour and luminance factor (whiteness) of non transparent materials at least every 20 000 kg;
- granulometry at least every 10 000 kg.

The reference sample for drop-on materials or for premix glass beads shall be of at least 0,3 kg.

5.5 Road studs

The final quality control testing shall include at least the following.

At the frequency of at least once a day and at least for 1 unit per 5 000 units,

a) on the bodies:

- dimensions;
- resilience/depressibility, only on depressible studs;

- colour of the body, only on temporary studs, by visual comparison with a reference model of the stud.

b) and on the optical parts, by visual comparison with a calibrated sample:

- colour of the reflected light;
- night-time visibility (R value).

The reference sample shall be of at least 3 units per lot.

5.6 Preformed road markings

The final quality control testing shall include at least the following.

a) Preformed thermoplastic road markings (hot applied):

- The same requirements as for thermoplastics (see 5.2);

- The reference sample shall be of at least 1 kg.

b) For cold applied preformed road markings at a frequency of once per lot:

- colour;
- daytime visibility;
- retroreflection;
- skid resistance value (SRT).

In addition, for pressure sensitive adhesives precoated onto preformed road markings:

- quantity of adhesive;

The reference sample shall be of at least 0,15 m^2.