

BS EN 13459:2011



BSI Standards Publication

# Road marking materials — Sampling from storage and testing

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**National foreword**

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The UK participation in its preparation was entrusted to Technical Committee B/509/2, Horizontal road markings and road studs.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

## Road marking materials - Sampling from storage and testing

Produits de marquage routier - Échantillonnage sur stock et  
essaisStraßenmarkierungsmaterialien - Probenahme an  
rückgestellter Produktion und Prüfung

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## Foreword

This document (EN 13459:2011) 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of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

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The Annex A of this European Standard is normative.

This European Standard is one of a package of inter-related European Standards with a common date of withdrawal (dow) fixed on December 2011 (*including the request of an extension for the co-existence period*):

- EN 1790, Road marking materials — Preformed road markings,
- EN 1824, Road marking materials — Road trials,
- EN 1871, Road marking materials — Paint, thermoplastic and cold plastic materials — Specifications,
- EN 12802, Road marking materials — Laboratory methods for identification,
- EN 13197, Road marking materials — Wear simulator Turntable,
- EN 13212, Road marking materials — Requirements for factory production control,
- EN 13459, Road marking materials — Sampling and testing.

## 1 Scope

This document specifies methods to obtain representative samples of road marking materials for testing and gives the appropriate test methods. The methods to obtain representative samples are described as appropriate for the main product types, i.e. paint, cold plastics, thermoplastics, premix glass beads, drop-on materials, preformed road markings and retroreflecting road studs.

NOTE This document may apply to the verification and/or identification of consignments of road marking materials or materials held in stock, for example in a warehouse or at the manufacturer's storage facility, or for materials which require checking prior to application.

## 2 Normative references

The following referenced documents are indispensable for the application 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.

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

EN 1424, *Road marking materials — Premix glass beads*

EN 1463-1, *Road marking materials — Retroreflecting road studs — Part 1: Initial performance requirements*

EN 1790, *Road marking materials — Preformed road markings*

EN 1871, *Road marking materials — Paint, thermoplastic and cold plastic materials — Specifications*

EN 12802, *Road marking materials — Laboratory methods for identification*

EN ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling (ISO 15528:2000)*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **original product container**

primary packaging of each batch of a road marking material

### 3.2

#### **intermediate bulk container (IBC)**

container used as an intermediate size between bags and tins and bulk transport.

## 4 Sampling procedures

NOTE Clause 4 specifies the procedure for the selection of original product containers and for obtaining representative samples from a stock for subsequent inspection and testing.

### 4.1 General

4.1.1 When a series of original product containers to be examined can be identified as being from a single batch, the number of containers to be selected for sampling shall be 1 %. Not less than two and not more than five containers shall be selected for sampling.

**4.1.2** When a series of original product containers to be examined can be identified as being from different batches, the sampling shall be organized as follows.

Determine the number of batches and refer to Table 1 to obtain the number of batches to be selected for sampling. The number of original product containers to be selected for sampling from each batch for testing shall be 1 %. Not less than two and not more than five containers shall be selected for sampling for each batch.

**4.1.3** When the consignment to be examined is not classified as being from different batches, or when the batch information is not known, determine the number of containers and refer to Table 1 to obtain the number of containers to be selected for sampling.

**Table 1 – Selection of batches or containers from a multi-batch stock**

Number of batches or containers in consignment ( <i>N</i> )	Number of batches or containers to be sampled ( <i>n</i> )
2 to 8	2
9 to 18	3
19 to 32	4
33 to 50	5
51 to 72	6
73 to 98	7
99 to 128	8
129 to 162	9
163 to 200	10
and thereafter at a rate of	$n = \sqrt{\frac{N}{2}}$
NOTE Where the calculation of <i>n</i> does not yield an integer, the number shall be rounded up to the next whole number.	

The samples shall be labelled with the information required to accompany the sample as specified in Annex A.

NOTE In order to avoid excessively large amounts of product being removed as samples it may be more appropriate to take representative samples on the storage site. When removing reduced samples from containers, reference should be made to the amount required for testing (see 5.1). Containers of large capacity should be sampled on the storage site by skilled personnel.

Samples removed for testing from original product containers shall be suitably packaged and stored in conditions in accordance with the manufacturer's recommendations.

## 4.2 Paint

A number (*n*) of original product containers shall be selected for sampling, at random, from the consignment or stock (*N*) in accordance with 4.1.

Representative samples of paint shall be taken from each selected container in accordance with EN ISO 15528.

## 4.3 Thermoplastics

### 4.3.1 General

NOTE Thermoplastic road marking material is usually supplied in powder form or in block form. In powder form the material can be packed in individual bags and then supplied stacked on a pallet with an outer wrapping. Alternatively the material can be supplied in intermediate bulk containers (IBC).

An appropriate amount of additives and meltable packaging shall also be sampled for subsequent incorporation during the testing of the thermoplastic road marking.

The selection of packages or containers shall be as specified in 4.3.2 to 4.3.4 as appropriate for the form of the packaging.

#### **4.3.2 Powder mix in bags**

A number ( $n$ ) of full pallets, containing stacked bags, shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Remove three bags from each selected pallet ensuring that they are all from the same production batch.

Either divide each bag separately using a suitable sample divider, having apertures of no more than 50 mm, to obtain three representative samples, each having a mass of approximately 4 kg, and combine the three samples.

Or if according to the manufacturer's recommendations such separate division is not possible, melt the three bags of material. Either divide the sample after cooling as described in 4.3.4, or take the sample directly from the melter.

#### **4.3.3 Powder mix in IBC**

A number ( $n$ ) of IBC shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Representative samples of thermoplastic material shall be taken from each selected IBC. Melt the material and remove samples from the melter to yield a combined sample of 12 kg.

#### **4.3.4 Block material**

A number ( $n$ ) of full pallets of block material shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Remove three blocks from each selected pallet, remove the packaging and break up the material from all three blocks. Discard any material which is not uniform in texture and colour, including burnt material from the production process. Take a portion of not less than 4 kg from the centre of each of the three blocks and combine these portions in a clean container. Do not apply heat at any stage of the sampling procedure.

### **4.4 Cold plastics**

NOTE This procedure applies to any of the components of cold plastics, which can be in liquid form, in paste form, or in solid form.

#### **4.4.1 Liquid or paste components**

A number ( $n$ ) of original product containers shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Representative samples of each component shall be taken from each selected container in accordance with EN ISO 15528.

The correct proportion of each component shall be maintained when taking the samples.

#### **4.4.2 Powder (solid) component**

A number ( $n$ ) of original product containers shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.



Representative samples of each component shall be taken from each container in accordance with EN ISO 15528.

Glass beads or aggregates, shall be sampled in accordance with EN 1423.

All solid components should be handled with care, following the instructions of the manufacturer.

The correct proportion of each component shall be maintained when taking the samples.

#### **4.5 Retroreflecting road studs**

NOTE This procedure applies to retroreflecting road studs and to retroreflecting inserts for road studs, and assumes that the road studs are stored in original product containers.

A number ( $n$ ) of original product containers shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Representative samples shall be taken by removing a minimum of three pieces from each selected container.

If the road stud is to be installed using a primer and/or an adhesive, then a sample of this material shall be taken in accordance with 4.2 for one-component products, 4.3.4 for hot-melted adhesives, or 4.4 for two-component products.

#### **4.6 Preformed road markings**

NOTE Preformed road markings are typically supplied in rolls or in packages containing a number of preformed sheets of the material.

A number ( $n$ ) of original product containers shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Smaller representative samples of preformed road marking shall be taken from each selected container in order to carry out all the tests required in accordance with EN 1790.

If a preformed road marking material is to be installed using a primer and/or an adhesive then a sample shall be taken in accordance with 4.2.

#### **4.7 Drop on materials and premix glass beads**

A number ( $n$ ) of original product containers shall be selected for sampling, at random, from the consignment or stock ( $N$ ) in accordance with 4.1.

Representative samples of drop-on materials and premix glass beads shall be taken from each selected container in accordance with EN 1423 and EN 1424 respectively.

NOTE Only containers without damage or deterioration of the packaging which could directly affect the quality of the sample, should be selected for sampling.

## **5 Testing of samples**

### **5.1 Minimum sample quantities**

Table 2 gives the minimum sample quantities for conducting all of the tests specified in 5.2 and 5.3.

**Table 2 – Minimum sample quantities to conduct tests** (see Note 1)

Product	Sample quantity
Paint	5 l
Thermoplastics	8 kg
Cold plastics (total of all components in correct proportions)	5 kg
Retroreflecting road studs (see Note 2)	3 units
Preformed road markings (see Note 2)	0,75 m <sup>2</sup>
Premix glass beads and drop-on materials	1,5 kg
NOTE 1 In the case of a reduced test programme, or when this standard is being used for other tests not defined in this standard, then different sample quantities may be used.	
NOTE 2 If a sample of adhesive is to be taken for testing for road studs and preformed road markings, a minimum quantity of 1 kg of sample is recommended.	

## 5.2 Identification testing

When samples of paint, thermoplastics and cold plastics have been obtained for the purpose of testing material for identification, the tests shall be carried out in accordance with the methods specified in EN 12802.

If required for confirmation of identity purposes, samples of paint, thermoplastics and cold plastics shall be obtained. Tests, as required, shall be carried out in accordance with the relevant methods specified in EN 12802. For preformed road markings the identification methods are specified in EN 1790.

NOTE For confirmation of identity, it may not be necessary to carry out all of the tests described in EN 12802.

## 5.3 Verification testing

### 5.3.1 General

When samples have been obtained for the purpose of verifying conformity to one or more requirements specified in product standards, the tests shall be carried out in accordance with 5.3.2 to 5.3.5.

### 5.3.2 Paint, cold plastics, thermoplastics

Paint, cold plastics, thermoplastics shall be tested in accordance with EN 1871.

### 5.3.3 Retroreflecting road studs

Road studs shall be tested in accordance with EN 1463-1.

### 5.3.4 Preformed road markings

Preformed road markings shall be tested in accordance with EN 1790.

### 5.3.5 Drop on materials and premix glass beads

Drop-on materials and premix glass beads shall be tested in accordance EN 1423 and EN 1424.

## 6 Test report

The test report shall include at least the following information:

- a) copy of the sampling report containing details as shown in Annex A;
- b) condition and appearance of the sample;
- c) tests carried out, test methods used and specified requirements;
- d) list of the test results;
- e) any other comments resulting from the testing;
- f) actual storage conditions of samples in the laboratory;
- g) name and address of the organization which performed the tests, the name of the person responsible for the test report and the date;
- h) number and year of this European Standard.

## **Annex A** (normative)

### **Minimum information required to accompany the sample**

Representative samples taken shall be accompanied by at least the following information:

- a) date of sampling;
- b) location of the stock;
- c) identification of the organization which performed the sampling;
- d) batch number;
- e) product identification;
- f) storage life information;
- g) instructions for use;
- h) condition of packaging;
- i) actual storage conditions;
- j) health and Safety information;
- k) condition and appearance of the product (when sampling from original containers);
- l) sampling procedure (with reference to this EN).



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