



SLOVENSKI STANDARD
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Geotekstilije in geotekstilijam sorodni izdelki - Kontrola kakovosti na mestu vgradnje

Geotextiles and geotextile-related products - On-site quality control

Geotextilien und geotextilverwandte Produkte - Baustellenkontrolle

Géotextiles et produits apparentés - Contrôle sur site

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Geotextiles and geotextile-related products - On-site quality control

Géotextiles et produits apparentés - Contrôle au chantier

Geotextilien und geotextilverwandte Produkte -
Baustellenkontrolle

This Technical Report was approved by CEN on 9 January 2005. It has been drawn up by the Technical Committee CEN/TC 189.

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Foreword

This document (CEN/TR 15019:2005) has been prepared by Technical Committee CEN/TC 189 “Geosynthetics”, the secretariat of which is held by IBN.

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1 Scope

This document contains recommendations for on-site quality control of geotextiles and geotextile-related products as part of the site quality assurance system. It describes procedures for verifying that:

- the correct product is delivered to site;
- the product is handled and installed in the correct manner;
- the specifications are met.

This document contains an annex showing five examples of report forms for use on the site and a bibliography.

2 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN ISO 10318 and the following apply.

The term “product” used in this document refers to a geotextile or geotextile-related product.

2.1 design specification

document which defines the application in which the product is to be used and where the functions, the characteristics and the design specification values of the characteristics required for use in the works are stated

2.2 product specification value

value of a product characteristic as stated by the manufacturer e.g. in the accompanying documents for CE marking. This value represents the mean value minus (and/or plus) one time the tolerance value(s) corresponding to the 95 % confidence level (as defined e.g. in EN 13249:2000, 5.2). By extension, this definition can also be applied to other characteristics described in Table 1 of the relevant product/application standard (see bibliography) and also to characteristics such as mass per unit area and thickness

2.3 sample

part of the product, taken over the whole width, from which specimens are taken for testing

2.4 specimen (test specimen)

part of the sample used for an individual test

2.5 test result (of a sample)

mean of the results obtained on the specimens tested

2.6 test lot

quantity of products considered as one unit for sampling and testing. This can be the total area to be covered by the product in the works

2.7 delivery lot

quantity of product delivered on site in a given period of time, which can be submitted to a single approval. Delivery lots are evaluated independently of each other

2.8**safety standard high**

application where long-term strength is a significant parameter and/or where the product plays a decisive role in the safety of the construction and the stability of the works, e.g. reinforcement (Eurocode 7 class 2)

2.9**safety standard normal**

all other applications than those defined under 2.9 (Eurocode 7 class 1)

3 Principle

The on-site quality control may consist of one or more of the following actions:

- evaluation of the compliance of a delivered product with the design specification (see 4.1);
- evaluation of the compliance of site-conditions with delivered product (see 4.2);
- inspection of handling and storage conditions (see 4.3);
- inspection of product installation (see 4.4);
- taking samples for evaluation of compliance with the design specification (see 4.5);
- placing and extracting control samples to check damage during installation (see 4.6);
- placing control samples to check the behaviour with time (see 4.7).

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4 Procedures**4.1 Evaluation of compliance of delivered product with the design specification (see Annex A.2)**

The following should be completely checked and documented by the contractor and randomly supervised by the client immediately after delivery:

- is the product marking and the information affixed to the unit in accordance with EN ISO 10320?
- is the CE-marking affixed to each unit?
- is the information required in Table 1 of the relevant product/application standard available?
- is the product in accordance with the purchase order and the delivery note?
- are the specification values of the product in accordance with the design specification?
- is the delivered product by the values tested conform with the design specification?

4.2 Evaluation of compliance of site conditions with the delivered product (see Annex A.3)

Generally, the actual site conditions fit with the design of the structure, but unforeseen circumstances may jeopardize this.

In case they are not complying with the design and the specifications, the contractor and the client should check, before installation of the product, if the product characteristics meet the actual site conditions.

As an example, they should check the compliance of the product characteristics with:

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- soils to be covered with fill material on site (influence on damage during installation, chemical factors e.g. by high or low pH);
- method of placing and compacting the fill (influence on damage during installation);
- stress by site traffic (rutting) ;
- influence of site conditions on the behaviour and the durability of the product.

4.3 Inspection of handling and storage conditions

Site handling of the units (rolls or packages) should comply with the recommendations of the manufacturer and one should ensure that damage to the product e.g. surface abrasion, slitting, notching or tearing is prevented (see Annex A.2). This should be checked by the contractor and at random by the client.

Products should be stored in accordance with the manufacturer's instructions. Prolonged exposure to weathering should be prevented by storage under cover or in the original packaging supplied by the manufacturer.

If the product is damaged: see 6. 6.1.

4.4 Inspection of product installation

During installation, it should be checked by the contractor and at random by the client, that the installation of the product is consistent with the design/drawings and specification (see Annex A.2 and A.3), i.e. that:

- product is laid as shown on the drawings or as described in the specification (e.g. installation plan);
- machine direction of the product is placed according to the design;
- there is sufficient overlapping between rolls;
- direction of overlapping is correct;
- joints or seams are applied where necessary;
- product is used "top-side up" (with the correct side against soil/building).

Products, whose functional properties can be affected by water, should be installed under dry circumstances. Products, which can be damaged by freezing (vegetation mats, etc.), should be installed when the temperature is above freezing point.

4.5 Sampling for evaluation of compliance with the design specification (see Annex A 3 and A 4)

Tests are proposed for evaluation of compliance with the design specification. The contractor therefore should implement a quality control procedure of products delivered to the construction site (see 4.5.1).

If the client requires additional control tests to identify the product delivered to site and its compliance with the specification, these tests should be specified in the contract documents (see 4.5.2).

The area of product to be included in each test or delivery lot has to be agreed between all contractual parties involved. The samples should be taken well in advance to allow obtaining the test results at the latest on the day of installation.

The evaluation procedure is given in chapter 5 and the actions, which result in chapter 6.

The number of samples and selection procedure should be defined in the contract documents.

The number of samples required should be a function of:

- importance of the product for the safety of the works;

- area of product used in the works.

4.5.1 Control of products delivered to the construction site

Samples to determine product compliance with the specification should be taken by the contractor together with the supplier of the product. The testing of the materials delivered to the construction site is the responsibility of the contractor.

Number of samples required:

- safety standard "high" applications: 1 sample every 6 000 m², with a minimum of 2 samples above 1 000 m²
- safety standard "normal" applications: 1 sample every 10 000 m², with a minimum of 1 sample above 1 000 m²

These control tests can be omitted, if the product is certified on the basis of a voluntary certification system where the following tasks are performed by the conformity assessment body:

- initial type testing of the product;
- initial inspection of the production and of the factory production control;
- continuous surveillance, assessment and approval of the factory production control;
- audit testing of specimens sampled in the factory, in the market or on the construction site.

4.5.2 Control tests by the client

Control tests are the responsibility of the client. Samples should be taken by a representative of the client, a conformity assessment body or a representative of an inspection body, together with the contractor at random from a delivery lot, to determine the identity of the product and its compliance with the design specification.

Number of samples required for control tests:

- safety level "high" applications : 1 sample every 30 000 m², with a minimum of 1 test above 1 000 m²
- safety level "normal" applications : 1 sample every 50 000 m², with a minimum of 1 test above 10 000 m²

4.5.3 Test programme

For sampling EN 963 should be applied, i.e. samples should be taken not less than 5 m from the end of the roll in machine direction and over the whole width in cross machine direction. The sampling report should be signed by all parties involved (e.g. client, contractor, supervisor). An example of such a sampling report is given in Annex A.4.

The location of each sample should be described exactly.

The actual tests to be performed follow from the design specification and the purpose (evaluation of identity and of conformity with specification). They should be defined in the contract on the basis of the design specification and this document. National rules should be observed.

A first approach to identification can be to perform simple tests on site. Though they are less precise than laboratory tests, they can be used for screening purposes. Laboratory tests become necessary, when there is any doubt.

Test procedures possible on site:

- sample comparison: comparison of the delivered products with samples of products offered;
- mass per unit area: a specimen is cut at minimum 1 m length in machine direction and over the whole width across. The length is measured at the edges and at minimum on 3 places in between at equal distances. The width is also measured at the edges. The precision of the measurements is ± 0.5 cm and