



SLOVENSKI STANDARD
oSIST ISO/DIS 14824-1:2012
01-junij-2012

Injekcijska masa za prednapete kable - 1. del: Osnovne zahteve

Grout for prestressing tendons - Part 1: Basic requirements

Coulis pour câbles de précontrainte - Partie 1: Exigences essentielles

Ta slovenski standard je istoveten z: ISO/DIS 14824-1

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ICS:

91.100.30	Beton in betonski izdelki	Concrete and concrete products
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en,fr,de

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Group for prestressing tendons —

Part 1: Basic requirements

Coulis pour câbles de précontrainte —

Partie 1: Exigences essentielles

ICS 91.100.30

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Contents

Foreword.....	3
Introduction	4
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Materials	5
4.1 General.....	5
4.2 Cement.....	5
4.3 Water	6
4.4 Admixtures	6
4.5 Additions	6
5 Batching and mixing of grout.....	6
6 Properties of grout.....	7
6.1 General.....	7
6.2 Sieve test	8
6.3 Fluidity	8
6.4 Bleeding.....	8
6.5 Volume change	8
6.6 Strength	8
6.7 Setting time	9
6.8 Density	9
7 Evaluation of conformity.....	9
7.1 Production control.....	9
7.2 Initial type testing	9
7.3 Audit testing.....	10
Bibliography	12

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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ISO 14824-1 was prepared by Technical Committee ISO/TC 71, *Concrete, Reinforced and Prestressed Concrete*, Subcommittee SC 3, *Production of Concrete and Execution of Concrete Structures*.

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Introduction

In post-tensioned prestressed concrete construction, the grouting of tendons is an important operation. The intention of this International Standard is to provide basic requirements for the approval of cement grouts, compliance with which will satisfy the requirements in ISO 22966.

The main function of grouting is to:

- Provide protection to the prestressing steel against corrosion;
- Provide a bond between the prestressing steel and the ducts where required for the design of the structure;
- Allow transfer of compressive stresses in the structure in a direction transverse to internal tendons;
- Fill all voids where water may accumulate and cause frost damage.

The testing regimes anticipated by this International Standard include three levels:

- (1) Initial type and audit testing in accordance with this ISO 14824-1;
- (2) Suitability testing for confirmation of the selected grout for a specific project in accordance with ISO 14824-2;
- (3) Inspection during grouting works on a specific project in accordance with ISO 14824-2.

The test methods for each of the regimes are given in ISO 14824-3.

NOTE: In some countries requirements exist for Independent Third Party Certification of Grout and Grouting procedures which should be set out in National Requirements to supplement ISO 22966 Execution of Concrete Structures.

Grout for prestressing tendons —

Part 1: Basic requirements

1 Scope

This International Standard Part 1, covers the materials that may be used in the manufacture of cement grouts and the required properties and composition of the grout. It is applicable to grouting of tendons in all types of structures including bridges and buildings.

NOTE: Certain special structures or tendon configurations may require grouts with enhanced performance which may require amendment of some of the requirements of this standard.

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.

ISO 9597, *Methods of testing cement – Determination of setting times and soundness*

ISO 22965-1, *Concrete – Part 1: Methods for specifying and guidance for the specifier*

ISO 22965-2, *Concrete – Part 2: Specification of constituent materials, production of concrete and compliance of concrete*

ISO 14824-2, *Grout for prestressing tendons – Part 2: Grouting procedures*

ISO 14824-3, *Grout for prestressing tendons – Part 3: Test methods*

ISO 12439, *Mixing water for concrete*

3 Terms and definitions

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

3.1

grout

homogeneous mixture of cement and water, it may contain admixtures and additions

3.2

tendon

assembly of prestressing steel and sheath with anchorages and all necessary auxiliary components to permit grouting, either placed internally or externally to the concrete structure

4 Materials

4.1 General

Materials shall have a general suitability in accordance with ISO 22965-2.

4.2 Cement

Cement shall be Portland cement or any other type of cement permitted for grouting of tendons which complies with national standards in the place of use of the grout. The cement type shall be declared.

ISO/CD 14824-1 (E)

4.3 Water

Water shall comply with ISO 12439.

4.4 Admixtures

Admixtures shall have an established suitability for use in grouts. It shall be permissible to use admixtures singly or in combination. Admixtures shall only be used according to the admixture manufacturer's instructions unless any variation is proven satisfactory by testing and approved by the manufacturer.

4.5 Additions

Grout complying with this standard may contain silica fume.

If permitted in the place of use grout may contain other additions intended for the use in concrete in accordance with ISO 22965-2. The type and amount of additions shall be declared.

5 Batching and mixing of grout

Materials may be batched and mixed on site to fabricate grout. Alternatively, the dry materials may be batched in a factory for ready-mixed grout and mixed with the liquid materials on site to fabricate grout.

All materials shall be batched by mass except the mixing water and liquid admixtures which may be batched by mass or volume. The accuracy of batching shall be

- $\pm 2\%$ for cement, dry admixtures and additions,
- $\pm 1\%$ for water and liquid admixtures,

of the quantities specified.

Water contained in liquid admixtures shall be declared and it shall be stated whether it is included in the calculation of w/c ratio.

All pozzolanic materials used as separate ingredients shall be included in the calculation of w/c ratio in accordance with the procedures in ISO 22965-2.

Mixing shall be carried out mechanically with suitable equipment to obtain a homogeneous and stable grout with the plastic properties given in Clause 6.

For any grout fabricated in accordance with this International Standard the following information shall be declared by the grout manufacturer:

- mix proportions of materials;
- w/c ratio and its acceptable variation;
- sequence of introducing the materials, type of mixer and mixing time;
- range of temperature for which the grout complies with this International Standard.

NOTE 1 Grouts complying with this standard normally have a w/c ratio below 0,45.

NOTE 2 ISO 14824-2 requires suitability testing to be carried out using the same type of mixing equipment as to be used for the actual project operations. Hence, it is preferable to also use the same type of equipment for all testing as far as possible.