SLOVENSKI STANDARD
SIST EN 61033:2007

01-november-2007

Preskusne metode za ugotavljanje vezalne moļi in impregnacijskih snovi na emajlirano ģiļ no podlago (substrat) (IEC 61033:1991 (EQV) + A1:2006)

Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate (IEC 61033:1991 (EQV) + A1:2006)

Prüfverfahren zur Bestimmung der Verbackungsfestigkeit von Imprägniermitteln auf einem Lackdraht-Substrat (IEC 61033:1991 (EQV) + A1:2006)

Méthodes d'essai pour la détermination du pouvoir agglomérant des agents d'imprégnation sur fil émaillé (IEC 61033:1991 (EQV) + A1:2006)

Ta slovenski standard je istoveten z: **EN 61033:2006**

ICS:

17.220.99	Drugi standardi v zvezi z elektriko in magnetizmom	Other standards related to electricity and magnetism
29.035.01	Izolacijski materiali na splošno	Insulating materials in general

SIST EN 61033:2007 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61033

December 2006

ICS 17.220.99; 29.035.01

English version

Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate
(IEC 61033:1991 + A1:2006)

Méthodes d'essai pour la détermination du pouvoir agglomérant des agents d'imprégnation sur fil émaillé
(CEI 61033:1991 + A1:2006)

Prüfverfahren zur Bestimmung der Verbackungsfestigkeit von Imprägniermitteln auf einem Lackdraht-Substrat
(IEC 61033:1991 + A1:2006)

This European Standard was approved by CENELEC on 2006-11-01. CENELEC 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 Central Secretariat or to any CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61033:2006 E

Foreword

The text of the International Standard IEC 61033:1991 + A1:2006, prepared by IEC TC 15, Standards on specifications for electrical insulating materials, was submitted to the Unique Acceptance Procedure and was approved by CENELEC as EN 61033 on 2006-11-01 without any modification.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61033:1991 + A1:2006 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60317	Series	Specifications for particular types of winding wires	EN 60317	Series
ISO 178	1975	Plastics - Determination of flexural properties of rigid plastics	-	-

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61033

Première édition
First edition
1991-04

Méthodes d'essai pour la détermination du pouvoir agglomérant des agents d'imprégnation sur fil émaillé

Test methods for the determination of bond strength of impregnating agents to an enamelled wire substrate

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http: //www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE M

Pour prix, voir catalogue en vigueur
For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST METHODS FOR THE DETERMINATION OF BOND STRENGTH OF IMPREGNATING AGENTS TO AN ENAMELLED WIRE SUBSTRATE

FOREWORD

1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 15C: Specifications, of IEC Technical Committee No. 15: Insulating materials.

The text of this standard is based on the following documents:

Six Months' Rule	Report on Voting
15C(CO)252 15C(CO)252A	15C(CO)270

Full information on the voting for the approval of this standard can be found in the Voting Report indicated in the above table.

This standard replaces IEC 290, published in 1969, and IEC 699, published in 1981.

The following IEC publication is quoted in this standard:

Publication No. 317: Specifications for particular types of winding wires.

Other publication quoted:

ISO 178 (1975): Plastics - Determination of flexural properties of rigid plastics.

TEST METHODS FOR THE DETERMINATION OF BOND STRENGTH OF IMPREGNATING AGENTS TO AN ENAMELLED WIRE SUBSTRATE

INTRODUCTION

This standard deals with three methods of test to determine the bond strength of impregnating agents in conjunction with enamelled wire substrates.

The methods are as follows:

1) Twisted coil test: method A

2) Helical coil test: method B

3) Wire bundle test: method C

1 Scope

This standard describes three methods of test to determine the bond strength of impregnating agents such as solvent-based varnishes and solventless resins to an enamelled wire substrate. Bond strength may be affected by cure, by test temperature, by thermal ageing, and for any impregnating agent, by the chosen type of wire enamel.

These three methods of test cover the prevailing standard practice of testing bond strength. For a certain group of materials, one of these methods may be assigned to be the referee method subject to a specification in the relevant specification sheet.

2 Methods of test

2.1 *Method A: twisted coil test*

2.1.1 *Principle*

In this test, 0,315 mm diameter enamelled winding wire in the form of a twisted coil is impregnated and cured. The maximum force to break this specimen is a measure of the bond strength.

2.1.2 *Specimen*

Prepare a random wound coil from an enamelled winding wire (see note 1) by means of a suitable winding equipment (see figure 1a). To prevent opening of the coil after removal from the winding equipment, each end of the winding wire, or short piece of enamelled wire may be wrapped around the coil two or three times in opposite directions. For this purpose the winding equipment is provided with appropriate notches (see figure 1b). For winding the coil, the following dimensions apply:

winding diameter: 57 mm ± 1 mm

width of the slot: 6 mm ± 1 mm

number of turns: 100 (see note 2)

nominal wire diameter: 0,315 mm

NOTES

1 For enamelled winding wire see also IEC 317.

2 Instead of 100 turns, two times 50 turns may be used to provide a bifilar winding that allows a.c. current heating of the coil if desired.

Remove the coil from the winding equipment and stretch it into an oval shape. Twist the coil two full turns around its longitudinal axis by means of a twisting device (see figures 2a and 2b). The twisted coil formed is about 7 mm in diameter and 85 mm to 90 mm in length and serves as substrate for the impregnating agent.

Unless otherwise specified in the purchase contract, treat the twisted coil once with the impregnating agent. With the twisted coil in the vertical position, immerse it in the impregnating agent for 5 min ± 1 min (see note). Remove it slowly and uniformly at a maximum rate of 1 mm/s. Drain horizontally for 10 min to 15 min and cure horizontally according to the manufacturer's recommendation or to an agreed schedule. If more than one treatment is to be given, dip, drain and cure the twisted coil vertically, reversing the direction for each subsequent treatment.

Prepare five specimens for each test temperature.

NOTE - Some impregnating agents, such as high viscosity or thixotropic products may require alternative processing methods.

2.1.3 *Equipment*

Use equipment according to ISO 178.

Dimensions of the supports of the test equipment shall comply with figure 3.

2.1.4 *Procedures*

With the specimen properly positioned according to figure 3, adjust the crosshead speed so that the maximum force is reached in about 1 min.

For tests at elevated temperatures (see note), a heating cabinet attached to the equipment may be used. Before testing, the test specimen shall be kept in the cabinet at the test temperature for a time just sufficient to ensure that the test specimen reaches this temperature. Extended heating of the specimen could affect the property.

NOTE - In case of current heating, the test temperature of the test specimen should be determined by adequate means, e.g. thermocouple, resistance measurements.