

# **SLOVENSKI STANDARD**

## **SIST EN 61394:2012**

**01-februar-2012**

---

**Nadzemni vodi - Zahteve za masti za vodnike iz aluminija in aluminijevih zlitin ter gole jeklene vodnike (IEC 61394:2011)**

Overhead lines - Requirements for greases for aluminium, aluminium alloy and steel bare conductors (IEC 61394:2011)

Freileitungen - Anforderungen für Fette für blanken Leiter aus Aluminium, Aluminiumlegierung und Stahl (IEC 61394:2011)

Lignes aériennes - Prescriptions pour les produits de protection pour conducteurs nus en aluminium, en alliage d'aluminium ou en acier (IEC 61394:2011)

<https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012>

**Ta slovenski standard je istoveten z: EN 61394:2011**

---

**ICS:**

29.060.20	Kabli	Cables
29.240.20	Daljinovodi	Power transmission and distribution lines

**SIST EN 61394:2012**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61394:2012

<https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

# EN 61394

November 2011

ICS 29.060.20; 29.240.20

English version

## Overhead lines - Requirements for greases for aluminium, aluminium alloy and steel bare conductors (IEC 61394:2011)

Lignes aériennes -  
Exigences pour les graisses pour  
conducteurs nus en aluminium, en alliage  
d'aluminium et en acier  
(CEI 61394:2011)

Freileitungen -  
Anforderungen für Fette für blanke Leiter  
aus Aluminium, Aluminiumlegierung und  
Stahl  
(IEC 61394:2011)

## iTeh STANDARD PREVIEW (standards.iteh.ai)

This European Standard was approved by CENELEC on 2011-11-16. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, 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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

## Foreword

The text of document 7/609/FDIS, future edition 1 of IEC 61394, prepared by IEC/TC 7 "Overhead electrical conductors" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61394:2011.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2012-08-16
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2014-11-16

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## Endorsement notice

The text of the International Standard IEC 61394:2011 was approved by CENELEC as a European Standard without any modification.

**ITEH STANDARD PREVIEW**  
**(standards.iteh.ai)**  
SIST EN 61394:2012  
<https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012>

## 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-2-11 + corr. December	1981 1999	Environmental testing - Part 2: Tests - Test Ka: Salt mist	EN 60068-2-11	1999
ISO 2137	2007	Petroleum products and lubricants - Determination of cone penetration of lubricating greases and petrolatum	-	-
ISO 2176	1995	Petroleum products - Lubricating grease - Determination of dropping point	-	-

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61394:2012

<https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 61394:2012

<https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012>



IEC 61394

Edition 1.0 2011-10

# INTERNATIONAL STANDARD



Overhead lines – Requirements for greases for aluminium, aluminium alloy and  
steel bare conductors

SIST EN 61394:2012  
[https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-  
e23e54194bc3/sist-en-61394-2012](https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012)

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

PRICE CODE

R

ICS 29.060.20; 29.240.20

ISBN 978-2-88912-706-1

## CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references .....	5
3 Designation system .....	5
4 Requirements for grease .....	6
5 Tests .....	6
5.1 Classification of tests .....	6
5.1.1 Type tests .....	6
5.1.2 Sample tests .....	6
5.2 Preconditioning of samples .....	6
5.2.1 Type A products .....	6
5.2.2 Type B products .....	6
5.2.3 Products taken from a conductor .....	6
5.3 Drop point .....	7
5.4 High temperature stability (Type A products only).....	7
5.5 Penetrability test .....	7
5.6 Low-temperature adherence .....	7
5.7 Acidity/alkalinity (type B grease only) .....	7
5.8 Ageing.....	8
5.8.1 Preconditioning.....	8
5.9 Corrosion tests.....	8
5.10 Stability of grease on conductor at high temperature .....	8
5.11 Stability of grease on conductor under short-circuit .....	9
Annex A (normative) Acidity or alkalinity test method for type B grease .....	11
Annex B (normative) Sample preparation and test procedure for ageing test.....	13
Annex C (normative) Stability of grease on conductor at high temperature.....	16
Annex D (normative) Stability of grease complete conductor under short-circuit.....	17
Bibliography.....	18
Figure 1 – Corrosion coupons .....	10
Figure B.1 – Coupon for type A grease .....	13
Figure B.2 – Coupon for type B grease .....	14
Table 1 – Classification of tests .....	6
Table A.1 – Acidity or alkalinity index formula .....	12



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

# OVERHEAD LINES – REQUIREMENTS FOR GREASES FOR ALUMINIUM, ALUMINIUM ALLOY AND STEEL BARE CONDUCTORS

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61394 has been prepared by IEC technical committee 7: Overhead electrical conductors.

This first edition of IEC 61394 cancels and replaces the first edition of technical specification IEC/TS 61394 published in 1997. It constitutes a technical revision and now has the status of an International Standard.

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

FDIS	Report on voting
7/609/FDIS	7/613/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**

A bilingual version of this publication may be issued at a later date.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 61394:2012](https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012)

<https://standards.iteh.ai/catalog/standards/sist/241c6d92-47f4-4bfl-8c13-e23e54194bc3/sist-en-61394-2012>

## OVERHEAD LINES – REQUIREMENTS FOR GREASES FOR ALUMINIUM, ALUMINIUM ALLOY AND STEEL BARE CONDUCTORS

### 1 Scope

This International Standard specifies the requirements and tests of greases designed for corrosion protection of bare overhead conductors.

### 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.

IEC 60068-2-11:1981, *Basic environmental testing procedures – Part 2-11: Tests – Test Ka: Salt mist*

ISO 2137:2007, *Petroleum products and lubricants – Determination of cone penetration of lubricating greases and petrolatum*

ISO 2176:1995, *Petroleum products – Lubricating grease – Determination of dropping point*

### 3 Designation system

Greases shall be designated  $\theta_1 A \theta_2$  or  $\theta_1 B \theta_2$  where *A* and *B* define the type of grease as follows:

- type *A*: products generally applied in the cold state, for example greases: semi-solid or solid products consisting essentially of a stabilized mixture of mineral or synthetic oil and thickeners such as metal soaps or inorganic compounds;
- type *B*: products generally applied in the hot state, for example petrolatum: semi-solid, or solid products made up essentially of microcrystalline waxes associated with small quantities of mineral oil and organic additives;
- $\theta_1$  is the lowest temperature in °C below 0 °C at which the grease will perform the requirement of protection of the conductor from atmospheric corrosion;
- $\theta_2$  is the highest temperature, in °C, at which the grease will perform to this requirement (achieve specified drop point or high temperature stability).

Examples:

- 20A150     type *A* grease with a temperature  $\theta_1$  of -20 °C and  $\theta_2$  of 150 °C.
- 20B110     type *B* grease with a temperature  $\theta_1$  of -20 °C and  $\theta_2$  of 110 °C.

The grease supplier shall provide a unique identifier for its grease, and shall retain details of its composition for future reference. The composition shall include manufacturing tolerance and shall remain unchanged while the grease is marketed under this specific identifier.