

**SLOVENSKI STANDARD**  
**SIST EN 61221:1999****01-januar-1999**

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**Petroleum products and lubricants - Triaryl phosphate ester turbine control fluids (category ISO-L-TCD) - Specifications (IEC 61221:1993)**

Petroleum products and lubricants - Triaryl phosphate ester turbine control fluids (category ISO-L-TCD) - Specifications

Mineralölerzeugnisse und Schmiermittel - Triaryl-Phosphatester-Turbinen-Steuerflüssigkeiten (Kategorie ISO-L-TCD) - Anforderungen

Produits pétroliers et lubrifiants - Fluides de régulation pour turbines, esters phosphates de triaryle (catégorie ISO-L-TCD) - Spécifications

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**Ta slovenski standard je istoveten z: EN 61221:1995****ICS:**

75.080	Naftni proizvodi na splošno	Petroleum products in general
75.100	Maziva	Lubricants, industrial oils and related products

**SIST EN 61221:1999****en**

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EUROPEAN STANDARD

EN 61221

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 1995

ICS 27.040; 75.120

Descriptors: Electrical engineering, lubricants, hydraulic fluids, fire-resistant fluids, ester, regulators, turbines, electric power stations, characteristics, tests, flammability testing, exothermic reactions

English version

**Petroleum products and lubricants**  
**Triaryl phosphate ester turbine control fluids**  
**(category ISO-L-TCD)**  
**Specifications**  
**(IEC 1221:1993)**

Produits pétroliers et lubrifiants

Fluides de régulation pour turbines,

esters phosphates de triaryle

(catégorie ISO-L-TCD)

Spécifications

(CEI 1221:1993)

Mineralölerzeugnisse und Schmiermittel

Triaryl-Phosphat-ester-Turbinen-

Steuerflüssigkeiten

(Kategorie ISO-L-TCD)

Anforderungen

(IEC 1221:1993)

SIST EN 61221:1999

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This European Standard was approved by CENELEC on 1994-12-06. 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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

### Foreword

The text of the International Standard IEC 1221:1993, prepared by IEC TC 10, Fluids for electrotechnical applications, was submitted to the formal vote and was approved by CENELEC as EN 61221 on 1994-12-06 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) 1995-12-15
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 1995-12-15

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexes A, B and ZA are normative and annex C is informative.

Annex ZA has been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 1221:1993 was approved by CENELEC as a European Standard without any modification.

SIST EN 61221:1999

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## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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

IEC Publication	Date	Title	EN/HD	Date
79-4	1975	Electrical apparatus for explosive gas atmospheres	-	-
79-4A	1990	First supplement	-	-
247	1978	Measurement of relative permittivity, dielectric dissipation factor and d.c. resistivity of insulating liquids	-	-
814	1985	Determination of water in insulating liquids by automatic coulometric Karl Fischer titration	HD 487 S1	1987
970	1989	Methods for counting and sizing particles in insulating liquids	-	-
978	1989	Maintenance and use guide for triaryl phosphate ester turbine control fluids	-	-

## Other publications:

**ISO 2592: 1973, Petroleum products – Determination of flash and fire points – Cleveland open cup method**

**ISO 3104: 1976, Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity**

Other publications:  
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- ISO 3170: 1988, *Petroleum products – Liquid hydrocarbons – Manual sampling*
- ISO 3448: 1975, *Industrial liquid lubricants – ISO viscosity classification*
- ISO 3675: 1976, *Crude petroleum and liquid petroleum products – Laboratory determination of density or relative density – Hydrometer method*
- ISO 4259: 1979, *Petroleum products – Determination and application of precision data in relation to methods of test*
- ISO 4406: 1987, *Hydraulic fluid power – Fluids – Method for coding level of contamination by solid particles*
- ISO 6614: 1983, *Petroleum oils and synthetic fluids – Determination of demulsibility characteristics*
- ISO 6618: 1987, *Petroleum products and lubricants – Neutralization number – Colour indicator titration method*
- ISO 6743-5: 1988, *Lubricants, industrial oils and related products (classe L) Classification – Part 5: Family T (Turbines)*
- ISO 6247: 199x, *Petroleum products ~~SIST Lubricating oils~~ – Determination of foaming characteristics \**  
<https://standards.iteh.ai/catalog/standards/sist/ce88f34b-3e0b-41a0-b72d-61e0f925fb39/sist-en-61221-1999>
- ISO 9120: 199x, *Petroleum-type steam turbine and other oils – Determination of air release properties – Impinger method\**
- DIN 51348: 1990, *Testing of fire-resistant governor fluids; determination of hydrolytic stability\*\**
- DIN 51349, *Testing of low-flammability governor fluids – flammability test\**
- DIN 51373: 1984, *Testing of fire resistant governor fluids; determination of resistance to oxidation including an assessment of the catalyst plates\*\**
- DIN 51577 part 3: 1990, *Testing of mineral oil hydrocarbons and similar products; determination of chlorine and bromine content; mass fraction <1000 mg/kg, analysis by wave-length dispersive X-ray spectrometry (XRS)\*\**
- DIN 51589 part 1: 1991, *Testing of lubricating oils and related products; determination of water separation ability of lubricating oils and low-flammability fluids after contact with steam\*\**

\* Currently at the stage of draft.

\*\* Method listed in the work programme of ISO/TC 28.

RAPPORT  
TECHNIQUE  
TECHNICAL  
REPORT

CEI  
IEC  
1221

Première édition  
First edition  
1993-06

Produits pétroliers et lubrifiants –  
Fluides de régulation pour turbines, esters  
phosphates de triaryle (catégorie ISO-L-TCD) –  
Spécifications

iTeh STANDARD PREVIEW

Petroleum products and lubricants –  
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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PETROLEUM PRODUCTS AND LUBRICANTS –  
TRIARYL PHOSPHATE ESTER TURBINE CONTROL FLUIDS  
(CATEGORY ISO-L-TCD) – SPECIFICATIONS**

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. 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. The 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 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.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

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The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 1221, which is a technical report of type 2, has been prepared by IEC technical committee 10: Fluids for electrotechnical applications.

The text of this technical report is based on the following documents:

Committee draft	Report on Voting
10(Sec)311	10(Sec)313

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

This document is issued in the type 2 technical report series of publications (according to G.4.2.2 of part 1 of the IEC/ISO Directives) as a "prospective standard for provisional application" in the field of turbine control fluids because there is an urgent requirement for guidance on how standards in this field should be used to meet an identified need.

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the IEC Central Office.

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A review of this type 2 technical report will be carried out not later than three years after its publication, with the options of either extension for a further three years or conversion into an International Standard or withdrawal.

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Annexes A and B form an integral part of this technical report.

Annex C is for information only.

## INTRODUCTION

The ISO/IEC co-ordination meeting, November 1977, decided that the specification standard for hydraulic fluids would be developed by a working group from technical committee 10 of the IEC composed of experts appointed by IEC National Committees and with the attendance of experts nominated by technical committee 28 of ISO. The final document, after circulation and comments to both ISO and IEC bodies, should, then, be published as an ISO standard. Standards concerning test methods referenced in the specification should be published by ISO TC 28 with the assistance of TC 10 expertise.

Due to changes in the organization of TC 28, the last stage of approval did not take place in ISO, nor the publication of test methods as ISO Standards.

It was decided by IEC TC 10 at its Madrid meeting in October 1991 to publish the final document in the form of a technical report type 2. During the three years before the review, ISO/TC 28 should publish as ISO standards the test methods now referenced to DIN standards or described in the annexes.

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