International Standard 6297

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Petroleum products — Aviation and distillate fuels containing a static dissipator additive — Determination of electrical conductivity

Produits pétroliers — Carburants aviation et distillats contenant un additif destiné à éliminer l'électricité statique — Détermination de la conductivité électrique

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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 developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6297 was developed by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, and was circulated to the member bodies in February 1982.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Austria	India	South Africa, Rep. of
Belgium	Iraq	Spain
Brazil	Israel	Sri Lanka
Bulgaria	Italy	Sweden
Canada	Japan	Switzerland
China	Korea, Rep. of	Turkey
Czechoslovakia	Mexico	United Kingdom
Egypt, Arab Rep. of	Netherlands	USA
France	Poland	USSR
Germany, F. R.	Portugal	Venezuela

No member body expressed disapproval of the document.

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Petroleum products — Aviation and distillate fuels containing a static dissipator additive — Determination of electrical conductivity

0 Introduction

0.1 The ability of a fuel to dissipate charge that has been generated during pumping and filtering operations is controlled by its electrical conductivity, which depends upon its content of ion species. If the conductivity is sufficiently high, charges dissipate fast enough to prevent their accumulation and dangerously high potentials in a receiving tank are avoided.

0.2 Two methods are available for field tests of fuel conductivity, namely a portable meter method for the direct measurement in tanks or the field or laboratory measurement of fuel samples, and an in-line meter method for the continuous measurement of fuel conductivities in a fuel distribution system.

In using either type of instrument, care must be taken in allowing the relaxation of residual electrical charges before measurement and in preventing fuel contamination. For specification purposes, conductivity measurements should be made with the portable meters.

1 Scope and field of application

This International Standard specifies two methods namely

Method A : a portable meter method

Method B : an in-line meter method

for the determination of the electrical conductivity of aviation fuels containing a static dissipator additive. The methods normally give a measurement of the conductivity when the fuel is uncharged, that is, electrically at rest (known as the rest conductivity).

2 Reference

ISO 6353/2, *Reagents for chemical analysis — Part 2 : Specification — First series.*

3 Principle

A voltage is applied across two electrodes in the fuel and the resulting current expressed as a conductivity value. With portable meters, the current measurement is made almost instantaneously upon application of the voltage to avoid errors due to ion depletion. Ion depletion or polarization is eliminated in dynamic monitoring systems by continuous replacement of the sample in the measuring cell. The procedure, with the correct selection of electrode size and current measurement apparatus, can be used to measure conductivities from 1 pS/m (picosiemens per metre) up. The commercially available equipment referred to in this method is designed to cover a conductivity range up to 2 000 pS/m with good precision, although some meters can only be read up to 500 or 1 000 pS/m (see 8.2).