International Standard 6250

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Aviation fuels — Determination of water reaction

Carburants aviation — Détermination de la réaction à l'eau

First edition — 1982-03-01

UDC 665.733.3 : 620.168 **Ref. No. ISO 6250-1982 (E)**

Descriptors : petroleum products, aviation fuels, chemical analysis, determination of content, water.

Price based on 2 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (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 set up 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 6250 was developed by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, and was circulated to the member bodies in October 1980.

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

Australia	Hungary	Poland
Austria	India	Portugal
Belgium	Iran	Romania
Brazil	Ireland	South Africa, Rep. of
Bulgaria	Israel	Spain
Canada	Italy	Sweden
Chile	Japan	Switzerland
China	Korea, Dem. P. Rep. of	Turkey
Czechoslovakia	Mexico	United Kingdom
Egypt, Arab Rep. of	Netherlands	USA
France	Norway	USSR
Germany, F. R.	Peru	

No member body expressed disapproval of the document.

Printed in Switzerland

Aviation fuels — Determination of water reaction

1 Scope and field of application

This International Standard specifies a method for the determination of the presence of water-miscible components in aviation gasoline and turbine fuels, and the effect of these components on the fuel-water interface.

2 Principle

A test portion of the fuel is shaken, using a standardized technique, at room temperature with a phosphate buffer solution. The change in volume of the aqueous layer, the appearance of the interface, and the degree of separation of the two phases are reported as the water reaction of the fuel.

3 Reagents

Use only reagents of recognized analytical reagent grade, and only distilled water or water of equivalent purity.

3.1 Acetone.

3.2 *n*-Heptane.

3.3 Glass-cleaning solution.

Saturate concentrated sulphuric acid (H_2SO_4, ϱ 1,84 g/ml) with potassium dichromate ($K_2Cr_2O_7$) or sodium dichromate ($Na_2Cr_2O_7$).

CAUTION — Care should be taken in handling this very strong acid, especially when it is hot.

3.4 *Phosphate buffer solution*, (pH 7).

Dissolve 1,15 g of potassium monohydrogen phosphate, anhydrous, (K_2HPO_4) and 0,47 g of potassium dihydrogen phosphate, anhydrous, (KH_2PO_4) in 100 ml of water.

4 Apparatus

Ordinary laboratory apparatus and

4.1 Graduated glass cylinder, glass-stoppered, of capacity 100 ml, with 1 ml graduations. The distance between the 100 ml mark and the top of the shoulder of the cylinder shall be within the range of 50 to 60 mm.

5 Preparation of apparatus

Clean the graduated cylinder (4.1) thoroughly before carrying out this test. Cleaning procedures found to be suitable are as follows :

5.1 Remove traces of oil from the graduated cylinder and stopper by flushing with hot tap water, brushing if necessary. Alternatively, remove all traces of oil from the graduated cylinder and stopper using *n*-heptane (3.2). Rinse with the acetone (3.1), followed by tap water.

5.2 Immerse the cylinder and stopper in the glass-cleaning solution (3.3) (see CAUTION in 3.3), rinse thoroughly with tap water, then distilled water, and finally rinse with the phosphate buffer solution (3.4) and drain.

NOTE — Only cylinders that drain cleanly should be used. If the cylinder does not drain cleanly (that is, without drops forming), soak it in hot (about 65 °C) glass-cleaning solution for approximately 30 min. Rinse it with tap water, then distilled water, and finally rinse with the phosphate buffer solution and drain.

6 Procedure

6.1 Measure 20 ml of the phosphate buffer solution (3.4) at room temperature into the cylinder and record the volume to the nearest 0,5 ml. Add 80 ml of the fuel to be tested at room temperature, and stopper the cylinder.

6.2 Shake the cylinder vigorously for approximately 2 min with an up-and-down motion, (2 to 3 strokes per second using 125 to 250 mm strokes). Take care to avoid a swirling motion during shaking of the cylinder since swirling action tends to break any emulsion that might be formed.

6.3 Immediately place the cylinder on a vibration-free surface and allow the contents to settle undisturbed for 5 min.

6.4 Without picking up the cylinder, record the results as outlined in clause 7. View the cylinder in diffused light.

7 Expression of results

7.1 Evaluation

7.1.1 Record any change in volume of the aqueous layer rounded to the nearest 0,5 ml.

7.1.2 Record and rate the interface in accordance with table 1.

Table 1 — Interface conditions

Rating	Appearance
1	Clear and clean.
1b	Small, clear bubbles covering not more than an estimated 50 % of the interface and no shreds, lace, or film at the interface.
2	Shred, lace or film at interface.
3	Loose lace or slight scum or both.
4	Tight lace or heavy scum or both.

7.1.3 Record and rate the degree of separation of the two phases in accordance with table 2.

Table 2 — Separation

Rating	Appearance
(1)	Complete absence of all emulsions or precipitates, or both, within either layer or upon the fuel layer.
(2)	Same as (1), except small air bubbles or small water droplets in the fuel layer.
(3)	Emulsions or precipitates, or both, within either layer or upon the fuel layer, or droplets, or both, in the water layer or adhering to the cylinder walls, excluding the walls above the fuel layer.

NOTE — Disregard any slight cloudiness in the fuel layer that is no longer visible when viewed against a white background.

7.2 Precision

The precision data relating to this method have not yet been established.

8 Test report

The test report shall contain at least the following information :

a) the type and identification of the product tested;

b) a reference to this International Standard or to corresponding a national standard;

c) the result of the test (see clause 7);

d) any deviation, by agreement or otherwise, from the procedure specified;

e) the date of the test.