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# INTERNATIONAL STANDARD 4317

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

## Surface active agents — Determination of water content — Karl Fischer method

*Agents de surface — Détermination de la teneur en eau — Méthode de Karl Fischer*

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# Surface active agents — Determination of water content — Karl Fischer method

## 0 INTRODUCTION

The Karl Fischer reagent is a solution containing anhydrous pyridinium sulphite and iodine, which are converted, in the presence of the slightest trace of water, into pyridinium sulphate and hydriodic acid respectively.

It is possible to proceed in one of two ways, as follows :

a) by determining the water in the product directly with the Karl Fischer reagent as a single solution. However, as this liquid has reduced stability unless it has been specially stabilized, this technique is recommended only when the determination has to be carried out frequently enough for the single reagent to be used up each day or when the stabilized reagent is available;

b) by determining the water by means of the iodine solution, after adding anhydrous pyridinium sulphite solution to the product. These two liquids are more stable for a longer period if kept separate and this technique, although also applicable in the other case, is particularly recommended when determinations have to be carried out at more or less regular intervals.

## 1 SCOPE

This International Standard specifies a Karl Fischer method for determining the water content of surface active agents.

Two variants are specified, according to the frequency at which the determinations have to be carried out (see clause 0) :

— the method using a single solution;

— the method using two solutions.

## 2 FIELD OF APPLICATION

This method is applicable to various products in the form of powders, pastes and solutions.

It is applicable only if so indicated in the specific standard for each product.

## 3 REFERENCES

ISO 607, *Surface active agents — Detergents — Methods of sample division.*[1)]

ISO/R 760, *Determination of water by the Karl Fischer method.*

## 4 SAMPLING

The laboratory sample of surface active agent shall be prepared and stored according to the instructions given in ISO 607.



## 5 METHOD USING A SINGLE SOLUTION

### 5.1 Procedure



In a solution or suspension in methanol of a test portion, weighed to the nearest 0,001 g, of the laboratory sample, such that the water it contains requires a measurable quantity of Karl Fischer reagent, determine the water in accordance with ISO/R 760.

### 5.2 Reproducibility

The difference between the results obtained on the same sample, in two different laboratories, should not exceed 0,2 %.

## 6 METHOD USING TWO SOLUTIONS

### 6.1 Principle

Reaction of the water contained in a test portion with iodine and sulphur dioxide in the presence of methanol and pyridine (Karl Fischer reagent).

### 6.2 Reagents

**6.2.1 Karl Fischer reagent A,** solution containing 100 g of anhydrous sulphur dioxide in 1 000 ml of a 50 % (*V*/*V*) solution of pyridine in absolute methanol [water content lower than 0,05 % (*m*/*m*)].

1) In preparation. (Revision of ISO/R 607.)

## 7 TEST REPORT

The test report shall include the following particulars :

a) all information necessary for the complete identification of the sample;

b) the reference of the method used (reference to this International Standard);

c) the results and the method of expression used;

d) the test conditions;

e) any operational details not specified in this International Standard, or regarded as optional, as well as any incidents likely to have affected the results.