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# INTERNATIONAL STANDARD



# 3363

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

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## Fluorochlorinated hydrocarbons for industrial use — Determination of acidity — Titrimetric method

*Hydrocarbures fluorochlorés à usage industriel — Détermination de l'acidité —  
Méthode titrimétrique*

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Sample Document

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**Descriptors :** fluorochlorinated hydrocarbons, chemical analysis, determination of content, acidity, volumetric analysis.

## 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 3363 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in February 1974.

It has been approved by the Member Bodies of the following countries :

|                     |             |                       |
|---------------------|-------------|-----------------------|
| Austria             | Hungary     | South Africa, Rep. of |
| Belgium             | India       | Spain                 |
| Bulgaria            | Ireland     | Switzerland           |
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No Member Body expressed disapproval of the document.

# Fluorochlorinated hydrocarbons for industrial use — Determination of acidity — Titrimetric method

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a titrimetric method for the determination of the acidity of fluorochlorinated hydrocarbons for industrial use.

The method is applicable to products of which the acidity is in the range 2 to 200  $\mu\text{mol}$  of univalent acid per kilogram.

Two procedures are given; one applicable to products that are liquid at ordinary temperatures (R 11, R 113, etc.), and the other to products that are gaseous at ordinary temperatures (R 12, R 22, R 114 etc.).

## 2 REFERENCES

ISO/R 1393, *Liquid halogenated hydrocarbons for industrial use — Determination of acidity.*

ISO 2209, *Liquid halogenated hydrocarbons for industrial use — Sampling.*

ISO 3427, *Gaseous halogenated hydrocarbons (liquefied gases) — Taking of sample.*

## 3 PRINCIPLE

Extraction of the acidity in the fluorochlorinated hydrocarbon by water.

Titration of the acidity of the aqueous phase with a standard volumetric sodium hydroxide solution in the presence of bromocresol green as indicator.

## 4 SAMPLING

The laboratory sample of liquid products shall be collected by the method specified in ISO 2209.

The laboratory sample of products which are gaseous at ordinary temperatures shall be collected as a liquefied gas in a stainless steel sample cylinder by the method specified in ISO 3427.

## 5 REAGENTS

During the analysis use only reagents of recognized analytical grade.

### 5.1 Distilled water, neutral to bromocresol green.

Add to distilled water, or water of equivalent purity, contained in a conical flask with a ground glass stopper,

1 % (V/V) of the bromocresol green solution (5.3) and neutralize with the sodium hydroxide solution (5.2) until the colour changes to clear blue.

### 5.2 Sodium hydroxide, 0,01 N standard volumetric solution.

Standardize this solution with 0,01 N standard volumetric hydrochloric acid solution under the conditions of the determination.

### 5.3 Bromocresol green, 1 g/l solution in 95 % (V/V) ethanol.

## 6 APPARATUS

Ordinary laboratory apparatus and

### 6.1 For products gaseous at ordinary temperatures

See the figure for the arrangement of apparatus.

#### 6.1.1 Needle valve, of any convenient type, with screw-thread union for connection to the sample cylinder.

#### 6.1.2 Bubble indicator, of glass, capacity about 15 ml.

NOTE — The bubble indicator is used empty to check complete vaporization of the test portion.

#### 6.1.3 Three tall-form Drechsel-type gas washing bottles, of capacity 100 ml, fitted with sintered glass disks.

### 6.2 For both liquid and gaseous products.

#### 6.2.1 Microburette, of capacity 2 ml, graduated in 0,01 ml.

## 7 PROCEDURE

### 7.1 Liquid products

Use the method specified in ISO/R 1393 with the following modifications appropriate for the products concerned :

#### 7.1.1 Test portion

Weigh, to the nearest 0,1 g, about 100 g of the laboratory sample.