UDC 661.723 : 536.48

Ref. No. : ISO/R 1394-1970 (E)

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION



# ISO RECOMMENDATION

# R 1394

## LIQUID HALOGENATED HYDROCARBONS FOR INDUSTRIAL USE

## DETERMINATION OF THE CLOUD POINT

1st EDITION
April 1970



Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

## BRIEF HISTORY

The ISO Recommendation R 1394, *Liquid halogenated hydrocarbons for industrial use – Determination of the cloud point,* was drawn up by Technical Committee ISO/TC 47, *Chemistry,* the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1394 which was circulated to all the ISO Member Bodies for enquiry in June 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

| | | |
|---|---|---|
| Austria | Israel | Sweden |
| Belgium | Italy | Switzerland |
| Chile | Netherlands | Thailand |
| Czechoslovakia | New Zealand | Turkey |
| France | Peru | U.A.R. |
| Germany | Portugal | United Kingdom |
| Hungary | Romania | U.S.S.R. |
| India | South Africa, Rep. of | |
| Iran | Spain | |

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in April 1970, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 1394 April 1970

# LIQUID HALOGENATED HYDROCARBONS FOR INDUSTRIAL USE

## DETERMINATION OF THE CLOUD POINT



### 1. SCOPE

This ISO Recommendation describes a simple method for detecting the presence of certain impurities (generally water) which, dissolved in halogenated hydrocarbons at ambient temperature, cause the formation of cloudiness when the product is cooled to a sufficiently low temperature.

### 2. PRINCIPLE

Determination of the temperature at which cloudiness appears in the clear sample, when it is gradually cooled under specified conditions.

### 3. APPARATUS

Ordinary laboratory apparatus and

3.1 *Cooling bath*, consisting of a 1 litre beaker containing a cooling mixture (generally acetone and solid carbon dioxide) and a suitable thermometer.

3.2 *100 ml conical flask*, with a ground stopper.

3.3 *Thermometer*, fitted with a ground glass joint that fits the flask (3.2), graduated in 0.5 °C and with a range suitable for the halogenated hydrocarbon in question.

3.4 *Oven*, capable of attaining a temperature of 130 °C.

### 4. PROCEDURE

The vessels used to make this determination should previously be dried at 130 °C in the oven (3.4) and kept in a desiccator.

Place in the dry conical flask (3.2) a volume of the laboratory sample, prepared according to ISO Recommendation R . . .*, sufficient to completely immerse the bulb of the thermometer (3.3), when the latter is in position. Then close the flask with the thermometer fitted with a ground glass joint (3.3).

Place the assembly in the cooling bath (3.1), agitating continuously. Proceed in such a way as to cause the temperature of the sample, as read on the thermometer (3.3), to fall by 3 to 4 °C per minute.

From time to time observe the sample and note the temperature at which cloudiness appears. Then remove the flask from the cooling bath, allow the sample to reheat gradually, and note the temperature at which the cloudiness disappears.

Then regulate and maintain the temperature of the cooling mixture at 2 °C below the mean value between the two temperatures previously read on the thermometer (3.3). Again immerse the flask (3.2), containing the sample, in the bath, agitating continuously. Observe the sample during the slow temperature fall on the thermometer and note for the last time the temperature at which a lasting cloudiness appears.

### 5. EXPRESSION OF RESULTS

Indicate, in degrees Celsius, the last temperature observed in this way.

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* Under study.