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# International Standard



# 2207

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## Petroleum waxes — Determination of congealing point

*Cires de pétrole — Détermination de la température de figeage*

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## Foreword

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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 2207 was developed by Technical Committee ISO/TC 28, *Petroleum products and lubricants*, and was circulated to the member bodies in December 1979.

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

Australia	Egypt, Arab Rep. of	South Africa, Rep. of
Austria	Germany, F. R.	Spain
Belgium	Hungary	Sweden
Brazil	India	Turkey
Bulgaria	Israel	United Kingdom
Canada	Netherlands	USA
Chile	Peru	USSR
China	Poland	Venezuela
Czechoslovakia	Romania	

No member body expressed disapproval of the document.

# Petroleum waxes — Determination of congealing point

## 1 Scope and field of application

**1.1** This International Standard specifies a method for the determination of the congealing point of petroleum waxes, including petrolatum.

**1.2** The congealing point of a wax is a property of interest to many petroleum wax consumers. The procedure specified in this International Standard allows determination of the temperature at which a sample being cooled develops a "set" or resistance to flow. At that temperature, the wax may be at or close to the solid phase, or it may be semi-solid and quite unctuous, depending on the composition of the wax or petrolatum being tested. In the case of petrolatums, congealing is associated with the formation of a gel structure as the sample cools.

NOTE — This International Standard is an alternative to ISO 6244, *Petroleum waxes — Determination of drop melting point*. Results obtained are usually lower than the results obtained by ISO 6244, the amount of deviation varying with the nature of the petroleum wax.

## 2 Definition

**congealing point** : The temperature, determined by a standard test, at which molten petroleum wax ceases to flow.

## 3 Principle

A test portion of wax is melted and a droplet is made to adhere to the bulb of a thermometer. Using a pre-warmed flask as an air-jacket, the droplet on the bulb is allowed to cool at a fixed rate until it congeals. The congealing point is the temperature at which the droplet ceases to flow as the thermometer is turned.

## 4 Apparatus

**4.1 Thermometer**, total immersion type conforming to the specification in the annex.

**4.2 Conical flask**, 100 to 150 ml nominal capacity, glass, to serve as a thermometer jacket.

**4.3 Cork or rubber stopper**, for attaching the thermometer to the conical flask.

## 5 Procedure

**5.1** Adjust the thermometer through the stopper so that the bottom of the bulb will be 10 to 15 mm above the bottom of the conical flask when the stopper is fitted snugly in the flask. After making this adjustment, remove the thermometer and stopper from the flask, being careful not to change the position of the stopper relative to the thermometer stem.

**5.2** Place approximately 50 g of sample representative of the material under inspection, in a porcelain evaporating dish or other suitable container.

**5.3** Place the empty conical flask (without the thermometer assembly) and the container holding the sample in a temperature-controlled oven set at  $99 \pm 3$  °C until the sample and flask reach oven temperature.

NOTE — For non-referee, routine testing of samples known to have low congealing points, the oven may be set at a lower temperature, but it should be at least 11 °C above the expected congealing point of the sample.

**5.4** Remove the sample from the oven and completely immerse the thermometer bulb in it without covering any part of the thermometer stem with sample. Gently stir the sample with the thermometer until the mercury column has stopped rising.

**5.5** While holding the thermometer bulb in the molten wax sample, remove the heated flask from the oven, using a towel or gloves to protect the hands. Now carefully remove the thermometer from the sample, taking care to retain a relatively large drop of sample adhering to the bulb. Holding the thermometer in a horizontal position, firmly fit the thermometer and stopper into the flask. Keep the assembly in a horizontal position.

**5.6** While observing the drop on the thermometer bulb at an eye-level position, rotate the thermometer and flask about a horizontal axis. Use a steady and even rate for each continuous full revolution, and complete each revolution in not less than 2 s and not more than 3 s. Do not pause at the completion of each revolution any longer than required to re-position the fingers for the next full and continuous rotation (see note). When the drop is observed to rotate with the bulb, immediately read the thermometer to the nearest 0,5 °C and record this determination. Make a repeat determination on the wax sample by repeating the above procedure, commencing at 5.3. If the difference between the results of these two determinations