

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1897

PHENOL, *o*-CRESOL, *m*-CRESOL, *p*-CRESOL, CRESYLIC ACID AND XYLENOLS
(FOR INDUSTRIAL USE)

DETERMINATION OF WATER BY THE KARL FISCHER METHOD
<https://standards.iteh.ai/catalog/standards/sist/44d072c5-1780-4c0c-9819-d5c72d9d7536/iso-r-1897-1971>

1st EDITION

May 1971

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Printed in Switzerland

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

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BRIEF HISTORY

The ISO Recommendation R 1897, *Phenol, o-cresol, m-cresol, p-cresol, cresylic acid and xylenols for industrial use – Determination of water by the Karl Fischer method*, 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. 1897, which was circulated to all the ISO Member Bodies for enquiry in November 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Israel	Spain
Belgium	Italy	Switzerland
Chile	Japan	Thailand
Czechoslovakia	Netherlands	Turkey
France	New Zealand	U.A.R.
Germany	Poland	United Kingdom
Greece	Portugal	U.S.S.R.
Hungary	Romania	
India	South Africa, Rep. of	

No Member Body opposed the approval of the Draft.

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

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ISO Recommendation

R 1897

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FOR INDUSTRIAL USE

DETERMINATION OF WATER BY THE KARL FISCHER METHOD

WARNING. These materials burn the skin and can be absorbed into the system through the skin. It is essential for the sampler to wear protective gloves, for example of polyvinyl chloride, and also a face shield. Inhalation of the vapours from hot material is to be avoided.

Phenols are extremely hygroscopic, and care should be taken to avoid contamination with atmospheric or other moisture.

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1. SCOPE AND FIELD OF APPLICATION

This ISO Recommendation describes a procedure for the determination of water content by the Karl Fischer method and is applicable to phenol, *o*-cresol, *m*-cresol, *p*-cresol, cresylic acid and xyleneols for industrial use.

NOTE. - Another procedure may be used as an alternative; it is based on the Dean and Stark method and is the subject of ISO Recommendation R 1898, *Phenol, o-cresol, m-cresol, p-cresol, cresylic acid and xyleneols for industrial use - Determination of water by the Dean and Stark method*. More reproducible results are likely to be obtained by the Karl Fischer method; it is therefore preferable to use this method, especially if the water content is less than 0.5 %.

2. SAMPLING

Apply the principles given in ISO Recommendation R . . *. The following principles should also be observed.

Place the laboratory sample representative of the material taken from the bulk in a clean, dry, dark-coloured, glass-stoppered bottle of such a size that it is nearly filled by the sample. If it is necessary to seal this bottle, care should be taken to avoid contaminating the contents.

3. PRINCIPLE

Reaction of any water present with a solution of iodine and sulphur dioxide in a pyridine methanol mixture (Karl Fischer reagent), previously standardized by titration with an exactly known mass of water.

* Sampling of chemical products will form the subject of a future ISO Recommendation.

4. PROCEDURE

4.1 Test portion

Weigh, to the nearest 0.01 g, about 10 g of the laboratory sample. If the laboratory sample is in the form of a solid crystalline mass or contains crystals, it should be completely melted and thoroughly mixed before taking the test portion, precautions being taken against overheating or contamination by moisture.

4.2 Determination

Carry out the determination as described in ISO Recommendation R 760, *Determination of water by the Karl Fischer method*.

5. TEST REPORT

The test report should give the following particulars :

- (a) the reference of the method used;
- (b) the results and the method of expression used;
- (c) any unusual features noted during the determination;
- (d) any operation not included in this ISO Recommendation or regarded as optional.

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ANNEX

This document forms one of a series of ISO Recommendations on methods of test for phenol, cresols, cresylic acid and xylenols for industrial use.

The complete list of the Recommendations already prepared or in course of preparation is as follows :

PHENOL, o-CRESOL, m-CRESOL, p-CRESOL, CRESYLIC ACID, XYLENOLS

- ISO/R 1897, *Determination of water by the Karl Fischer method.*
ISO/R 1898, *Determination of water by the Dean and Stark method.*
ISO/R 1899, *Determination of neutral oils and pyridine bases.*

PHENOL, o-CRESOL, m-CRESOL, p-CRESOL

- ISO/R 1900, *Determination of residue on evaporation.*
ISO/R 1901, *Determination of crystallizing point.*
ISO/R 2208, *Determination of crystallizing point after drying with a molecular sieve.**
ISO/R 1902, *Test for impurities insoluble in sodium hydroxide solution – Visual test.*
ISO/R 2273, *Determination, after combustion, of total sulphur (conductimetric method) and chlorine content (potentiometric or spectrophotometric method).**

LIQUEFIED PHENOL, m-CRESOL, CRESYLIC ACID, XYLENOLS

- ISO/R 1903, *Determination of density at 20 °C.* [ISO/R 1897:1971
https://standards.iteh.ai/catalog/standards/sist/44d072c5-1780-4c0c-9819-d5c72d9d7536/iso-r-1897-1971](https://standards.iteh.ai/catalog/standards/sist/44d072c5-1780-4c0c-9819-d5c72d9d7536/iso-r-1897-1971)

PHENOL

- ISO/R 1904, *Determination of phenol content – Bromination method.**

LIQUEFIED PHENOL

- ISO/R 1905, *Test for impurities insoluble in water – Visual test.*

CRESYLIC ACID AND XYLENOLS

- ISO/R 1906, *Determination of distillation range.*
ISO/R 1907, *Determination of residue on distillation.*
ISO/R 1908, *Test for absence of hydrogen sulphide.*
ISO/R 1909, *Measurement of colour.*
ISO/R 1910, *Determination of o-cresol content.*

CRESYLIC ACID

- ISO/R 1911, *Determination of m-cresol content.*

NOTE. – A laboratory sample of not less than 500 ml (for phenol and cresols) or 1000 ml (for cresylic acid and xylenols) is necessary to carry out the whole series of tests described in these documents.

* At present at the stage of Draft ISO Recommendation.

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