UDC 661 : 547.562/563

Ref. No. :ISO/R 1909-1971 (E)

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

# ISO RECOMMENDATION

# R 1909

1897/VII



## CRESYLIC ACID AND XYLENOLS FOR INDUSTRIAL USE



## MEASUREMENT OF COLOUR

1st EDITION

May 1971



Printed in Switzerland

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

## BRIEF HISTORY

The ISO Recommendation R 1909, *Cresylic acid and xylenols for industrial use – Measurement of colour,* 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. 1909, 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.

ISO Recommendation R 1909 May 1971

# CRESYLIC ACID AND XYLENOLS

# FOR INDUSTRIAL USE

# MEASUREMENT OF COLOUR

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.



## 1. SCOPE AND FIELD OF APPLICATION

This ISO Recommendation describes a method for the measurement of colour of cresylic acid of high *m*-cresol content, cresylic acid of high *o*-cresol content and xylenols, for industrial use.

## 2. SAMPLING

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

Place a 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

Comparison of the colour of the sample against that of standard solutions specified in section 6 below. (The colour of cresols is liable to darken on keeping and on exposure to light.)

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

## 4. REAGENTS

Distilled water or water of equivalent purity should be used in the test.

4.1 *Cobalt sulphate*, crystalline ($CoSO_4.7H_2O$).

4.2 *Copper sulphate*, crystalline ($CuSO_4.5H_2O$).

4.3 *Potassium dichromate*, crystalline ($K_2Cr_2O_7$).

4.4 *Potassium cyanoferrate (III)* [$K_3Fe(CN)_6$].

## 5. APPARATUS

Ordinary laboratory apparatus, and

5.1 Two matched *Nessler cylinders*, capacity 50 ml.

## 6. PREPARATION OF COLOUR STANDARD MATCHING SOLUTION



Prepare the following colour standard matching solutions, dissolving the indicated quantities of reagents per 1000 ml of water, in a one-mark volumetric flask.





| Colour No. | Mass of reagent g | Reagent |
|---|---|---|
| 1 | 0.90<br>0.015 | Cobalt sulphate (4.1)<br>Potassium dichromate (4.3) |
| 2 | 6.0<br>0.015 | Cobalt sulphate (4.1)<br>Potassium dichromate (4.3) |
| 3 | 4.0<br>0.075<br>1.0 | Cobalt sulphate (4.1)<br>Potassium dichromate (4.3)<br>Copper sulphate (4.2) |
| 4 | 22.5<br>0.06 | Cobalt sulphate (4.1)<br>Potassium dichromate (4.3) |
| 5 | 10.0<br>0.18<br>2.5 | Cobalt sulphate (4.1)<br>Potassium dichromate (4.3)<br>Copper sulphate (4.2) |
| 6 | 70.0<br>0.5 | Cobalt sulphate (4.1)<br>Potassium dichromate (4.3) |
| 7 | 320.0 | Potassium cyanoferrate (III) (4.4) |
| 8 | Any cresylic acid darker than Colour No. 7 | |

The tint of the even-numbered colours is red and that of the odd-numbered colours is yellow.

The standard colour solution No. 7 should be freshly prepared on the day of the test. The other solutions keep well and may be used up to 1 month from the date of preparation.

## 7. PROCEDURE

Compare 50 ml of the laboratory sample with 50 ml of the colour standard matching solution (see Section 6) agreed between the parties, in the Nessler cylinders (5.1), held vertically 75 mm above the surface of an opaque opal glass sheet reflecting diffused daylight.

NOTE. – It is usual to specify two colour standards, one from the even-numbered series and one from the odd-numbered series.

## 8. EXPRESSION OF RESULTS

Report the colour of the sample as being not darker than, equal to, or darker than those of the colour standards agreed between the parties.

## 9. 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.

# 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.*



**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.

Date of the first printing :
August 1971

Price based on 4 pages