# INTERNATIONAL STANDARD 1696



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## *p*-Chlorotoluene for industrial use — List of methods of test

p-*Chlorotoluène à usage industriel — Liste des méthodes d'essai*

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## 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.

Prior to 1972, the results of the work of the technical committees were published as ISO Recommendations; these documents are in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 47, *Chemistry*, has reviewed ISO Recommendation R 1696-1970 and found it technically suitable for transformation. International Standard ISO 1696 therefore replaces ISO Recommendation R 1696-1970, to which it is technically identical.

ISO Recommendation R 1696 had been approved by the member bodies of the following countries :

| | | |
|---|---|---|
| Australia | Hungary | Romania |
| Austria | India | South Africa, Rep. of |
| Belgium | Iran | Spain |
| Brazil | Israel | Switzerland |
| Canada | Italy | Thailand |
| Czechoslovakia | Netherlands | Turkey |
| Egypt, Arab Rep. of | New Zealand | United Kingdom |
| France | Peru | U.S.S.R. |
| Germany | Poland | Yugoslavia |
| Greece | Portugal | |

No member body had expressed disapproval of the Recommendation.

No member body disapproved the transformation of the Recommendation into an International Standard.



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# *p*-Chlorotoluene for industrial use — List of methods of test

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the methods of test for *p*-chlorotoluene (4-chlorotoluene) ($CH_3C_6H_4Cl$) for industrial use.

## 2 REFERENCES

ISO 758, *Liquid chemical products for industrial use — Determination of density at 20 °C.*

ISO/R 918, *Test method for distillation (distillation yield and distillation range).*

ISO 1392, *Determination of crystallizing point — General method.*

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

## 3 SAMPLING

Prepare the laboratory sample in accordance with ISO 2209.

## 4 DETERMINATION OF DISTILLATION CHARACTERISTICS

Use the method specified in ISO/R 918, subject to the following particulars and modifications appropriate for *p*-chlorotoluene.

**4.1 Principle** (See clause 2 in ISO/R 918)

This determination indicates the difference between the temperatures corresponding to the collection of two volumes of distillate, $V_0$ and $V_1$. These two volumes will be indicated in the specification for *p*-chlorotoluene agreed between the interested parties.

**4.2 Distillation flask** (See 3.1 in ISO/R 918)

Nominal capacity : 150 ml.

**4.3 Thermometer** (See 3.2 in ISO/R 918)

Range : 145 to 165 °C.

**4.4 Distillation rate** (See 6.2 in ISO/R 918)

4 to 5 ml/min.

**4.5 Temperature correction** (See 5.2 and 7.2 in ISO/R 918)

For this determination no adjustment of the thermometer readings is required for variations in barometric pressure.

## 5 DETERMINATION OF DENSITY AT 20 °C

Use the method specified in ISO 758.

## 6 DETERMINATION OF CRYSTALLIZING POINT

Use the method specified in ISO 1392, subject to the following particulars and modifications appropriate for *p*-chlorotoluene.

**6.1 Scope** (See clause 1 in ISO 1392)

Determination of the crystallizing point of a dried sample.

**6.2 Thermometer** (See 4.4 in ISO 1392)

Range : − 5 to + 25 °C.

**6.3 Preparation of test sample** (See clause 5 in ISO 1392)

Use calcium sulphate as drying agent.

## 7 DETERMINATION OF *o*- AND *p*-CHLOROTOLUENE CONTENT

**7.1 Principle**

Reading, from the crystallizing point diagrams (see figures 1 and 2) or from the table, of the *o*-chlorotoluene content corresponding to the crystallizing point of the sample.

**7.2 Procedure**

Determine the crystallizing point of the dried sample according to clause 6 and determine the *o*-chlorotoluene content corresponding to this crystallizing point from the diagram of figure 1.

*p*-Chlorotoluene usually contains small quantities of the ortho isomer; from figure 2, which is drawn to a larger scale, more precise readings are possible for *o*-chlorotoluene contents between 0 and 9 % (*m*/*m*). To simplify this reading, the table shows the *o*-chlorotoluene content corresponding to each 0,1 °C within this concentration range.

NOTE — This method normally applies to a two-component system. If the sample contains small quantities of impurities other than *o*-chlorotoluene, these will affect the values of the *o*-chlorotoluene content.

## 8 TEST REPORT

The test report for each determination shall include 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 operations not included in this International Standard or in the documents to which reference is made, or regarded as optional.

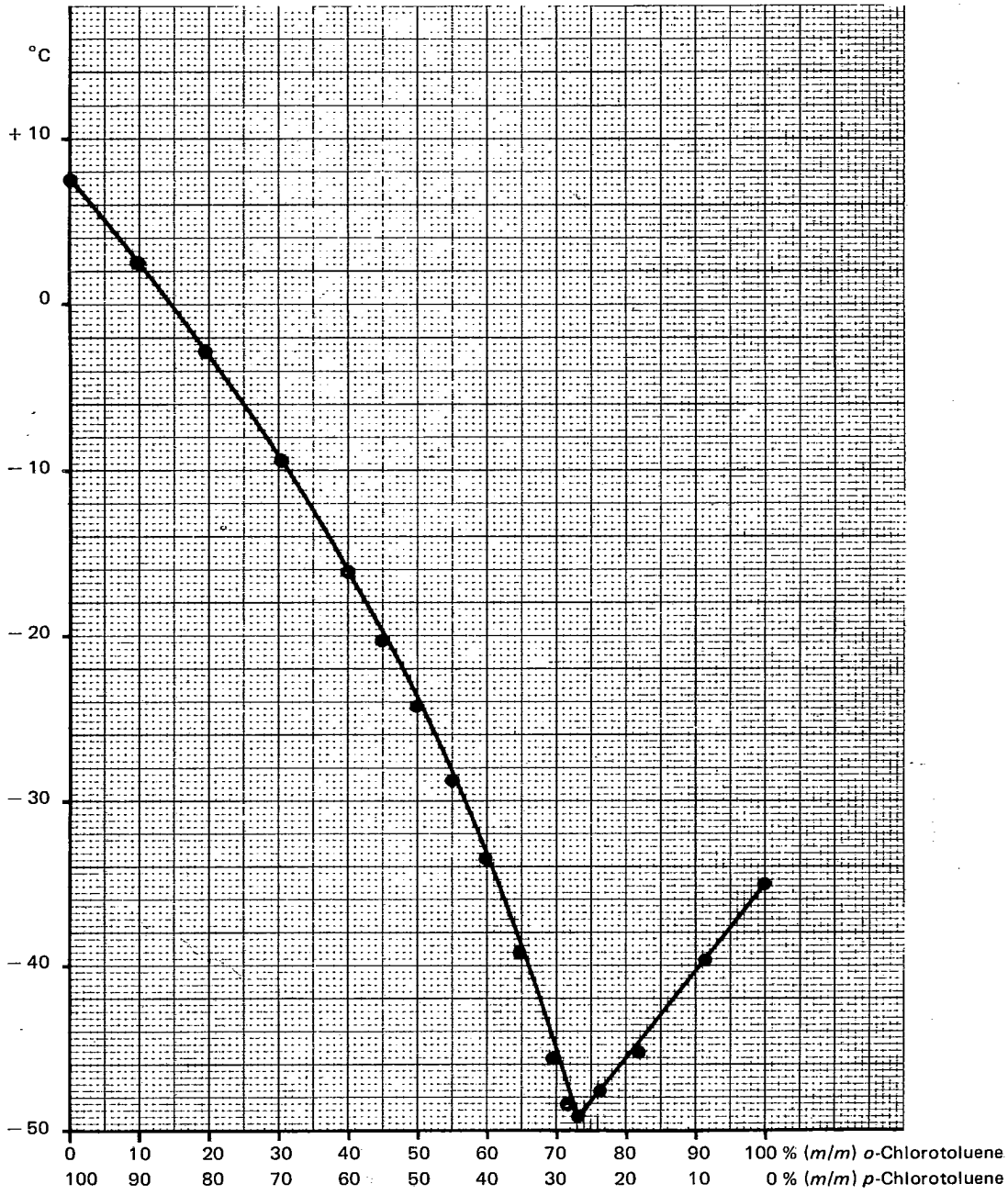


FIGURE 1 – **Complete crystallizing point diagram of the *o*-/*p*-chlorotoluene system**

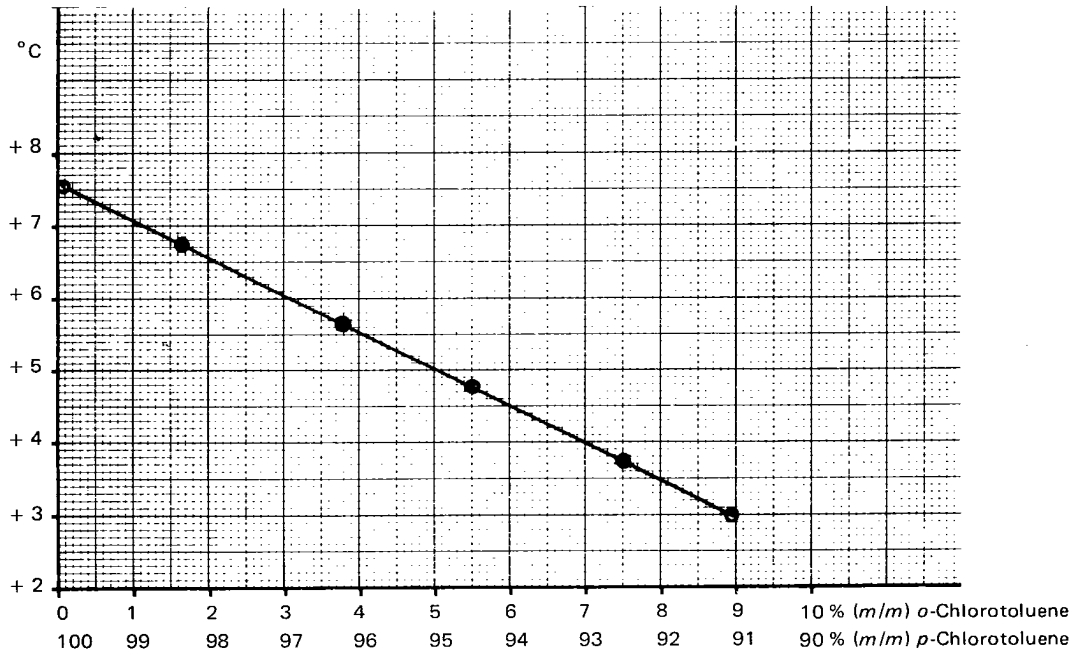


FIGURE 2 — **Crystallizing point diagram of the *o*-/*p*-chlorotoluene system, for the range 0 to 9 % (*m*/*m*) *o*-chlorotoluene**

TABLE — ***o*-Chlorotoluene content as a function of the crystallizing point of the *o*-/*p*-chlorotoluene system, for the range 0 to 9 % (*m*/*m*) *o*-chlorotoluene**

| Crystallizing point of the dried product | *o*-Chlorotoluene content | Crystallizing point of the dried product | *o*-Chlorotoluene content |
|---|---|---|---|
| °C | % (*m*/*m*) | °C | % (*m*/*m*) |
| + 7,6 | 0,0 | + 5,3 | 4,6 |
| + 7,5 | 0,2 | + 5,2 | 4,8 |
| + 7,4 | 0,4 | + 5,1 | 5,0 |
| + 7,3 | 0,6 | + 5,0 | 5,2 |
| + 7,2 | 0,8 | + 4,9 | 5,4 |
| + 7,1 | 1,0 | + 4,8 | 5,6 |
| + 7,0 | 1,2 | + 4,7 | 5,8 |
| + 6,9 | 1,4 | + 4,6 | 6,0 |
| + 6,8 | 1,6 | + 4,5 | 6,2 |
| + 6,7 | 1,8 | + 4,4 | 6,4 |
| + 6,6 | 2,0 | + 4,3 | 6,6 |
| + 6,5 | 2,2 | + 4,2 | 6,8 |
| + 6,4 | 2,4 | + 4,1 | 7,0 |
| + 6,3 | 2,6 | + 4,0 | 7,2 |
| + 6,2 | 2,8 | + 3,9 | 7,4 |
| + 6,1 | 3,0 | + 3,8 | 7,6 |
| + 6,0 | 3,2 | + 3,7 | 7,8 |
| + 5,9 | 3,4 | + 3,6 | 8,0 |
| + 5,8 | 3,6 | + 3,5 | 8,2 |
| + 5,7 | 3,8 | + 3,4 | 8,4 |
| + 5,6 | 4,0 | + 3,3 | 8,6 |
| + 5,5 | 4,2 | + 3,2 | 8,8 |
| + 5,4 | 4,4 | + 3,1 | 9,0 |