
**Paints and varnishes — Determination
of water content — Gas-
chromatographic method**

*Peintures et vernis — Détermination de la teneur en eau — Méthode
par chromatographie en phase gazeuse*



This document is a preview generated by ERS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Apparatus	2
5.1 Gas chromatograph	2
5.2 Sample injection system	2
5.3 Oven	2
5.4 Detector	2
5.5 Capillary column	2
5.6 Injection syringe	2
5.7 Data processing	2
5.8 Sample vials	2
5.9 Gas filter	2
5.10 Carrier gas	3
5.11 Analytical balance	3
5.12 Bottle-top dispenser	3
6 Reagents and materials	3
6.1 Internal standard (anhydrous)	3
6.2 Dilution solvent	3
6.3 Water	3
6.4 Molecular sieve	3
7 Sampling	3
8 Procedure	4
8.1 Gas-chromatographic conditions	4
8.2 Water content of the dilution solvent	4
8.3 Calibration	4
8.4 Sample preparation	4
8.5 Quantitative determination of water content	5
9 Expression of results	6
10 Precision	6
10.1 General	6
10.2 Repeatability limit, r	6
10.3 Reproducibility limit, R	6
11 Test report	7
Annex A (informative) Example of gas-chromatographic conditions	8
Annex B (informative) Information about precision	9
Bibliography	11

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Paints and varnishes — Determination of water content — Gas-chromatographic method

1 Scope

This document specifies a method for the determination of the water content of water-borne coating materials and their raw materials by using a gas chromatograph. The preferred working range of this test method is from a water mass fraction of 15 % to a water mass fraction of 90 % but the method can be applied outside of this range.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 760, *Determination of water — Karl Fischer method (General method)*

ISO 1513, *Paints and varnishes — Examination and preparation of test samples*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 4618, *Paints and varnishes — Terms and definitions*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

ready for use

state of a product when it is mixed in accordance with the manufacturer's instructions in the correct proportions and thinned if required using the correct thinners so that it is ready for application by the approved method

[SOURCE: ISO 11890-2:2013, 3.4]

4 Principle

A suitable amount of the sample is internally standardized, diluted with appropriate organic solvent, and then injected into a gas chromatographic column that separates water from other components, after which the water is detected by a thermoconductivity detector and quantified from the peak areas using the internal standard.