

# **Binders for paints and varnishes - Determination of monomeric diisocyanates in polyisocyanate resins**

Binders for paints and varnishes - Determination of  
monomeric diisocyanates in polyisocyanate resins

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 10283:2007 sisaldab Euroopa standardi ISO 10283:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.11.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 10283:2007 consists of the English text of the European standard ISO 10283:2007.</p> <p>This document is endorsed on 22.11.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b></p> <p>This International Standard specifies a gas-chromatographic method for determining monomeric diisocyanates such as toluene diisocyanate), hexamethylene diisocyanate, isophorone diisocyanate), diphenylmethane diisocyanate) and other diisocyanates in isocyanate resins as defined in clause 3 and in solutions prepared from such resins, insofar as these are used in the formulation of paints and similar coating materials.</p>	<p><b>Scope:</b></p> <p>This International Standard specifies a gas-chromatographic method for determining monomeric diisocyanates such as toluene diisocyanate), hexamethylene diisocyanate, isophorone diisocyanate), diphenylmethane diisocyanate) and other diisocyanates in isocyanate resins as defined in clause 3 and in solutions prepared from such resins, insofar as these are used in the formulation of paints and similar coating materials.</p>
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Võtmesõnad:

English Version

Binders for paints and varnishes - Determination of monomeric  
diisocyanates in isocyanate resins (ISO 10283:2007)

Liants pour peintures et vernis - Détermination des  
diisocyanates monomères dans les résines isocyanates  
(ISO 10283:2007)

Bindemittel für Beschichtungsstoffe - Bestimmung von  
monomeren Diisocyanaten in Isocyanatharzen (ISO  
10283:2007)

This European Standard was approved by CEN on 21 August 2007.

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Management Centre: rue de Stassart, 36 B-1050 Brussels

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## Foreword

This document (EN ISO 10283:2007) has been prepared by Technical Committee ISO/TC 35 "Paints and varnishes" in collaboration with Technical Committee CEN/TC 139 "Paints and varnishes", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2008, and conflicting national standards shall be withdrawn at the latest by March 2008.

This document supersedes EN ISO 10283:2006.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

### Endorsement notice

The text of ISO 10283:2007 has been approved by CEN as a EN ISO 10283:2007 without any modification.

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**Binders for paints and varnishes —  
Determination of monomeric  
diisocyanates in isocyanate resins**

*Liants pour peintures et vernis — Détermination des diisocyanates  
monomères dans les résines isocyanates*



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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10283 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 10, *Test methods for binders for paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 10283:1997), in which the normative references clause has been updated.

## Introduction

It is well-known fact that, due to the production methods used, all the commercial isocyanate resins named in this standard contain a certain amount of volatile monomeric isocyanates. This amount is generally less than 0,5 % relative to the resin as supplied. In view of the regulations relating to the handling of hazardous substances, it has become a matter of special concern that a generally accepted and applicable method of determination should be available. This standard is not intended to present a method suitable for the analytical determination of volatile isocyanates in any form and in any quantity. The standard specifies a method confined to determining the amounts of volatile isocyanates which occur in practice in isocyanate resins, namely about 0,1 % to 0,4 %. A further objective of the standard was to develop a method for determining with adequate accuracy as many as possible of the monomeric isocyanates which occur in isocyanate resins. It detects the principle isocyanates, namely toluene diisocyanate (TDI), hexamethylene diisocyanate (HDI), diphenylmethane diisocyanate (MDI) and isophorone diisocyanate (IPDI), and is a method considered by industry, authorities and institutes alike to be the state of the art.

# Binders for paints and varnishes — Determination of monomeric diisocyanates in isocyanate resins

## 1 Scope

This International Standard specifies a gas-chromatographic method for determining monomeric diisocyanates such as toluene diisocyanate<sup>1)</sup>, hexamethylene diisocyanate, isophorone diisocyanate<sup>2)</sup>, diphenylmethane diisocyanate<sup>3)</sup> and other diisocyanates in isocyanate resins as defined in Clause 3 and in solutions prepared from such resins, insofar as these are used in the formulation of paints and similar coating materials.

## 2 Normative references

The following referenced documents are indispensable for the application 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 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### isocyanate resin

synthetic resin, with or without solvent, based on aromatic, aliphatic or cycloaliphatic isocyanates containing isocyanate (NCO) groups

NOTE For the purposes of this International Standard, such isocyanate resins comprise:

- those which are manufactured from any diisocyanate, in particular toluene diisocyanate (TDI), hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI) or diphenylmethane diisocyanate (MDI), and which contain urethane and/or biuret and/or isocyanurate groups;
- those which are prepared from mixtures of the isocyanate resins given above.

1) The term “toluene diisocyanate” is used here and in the following text for 4-methyl-1,3-phenylene diisocyanate (2,4-toluene diisocyanate) and 2-methyl-1,3-phenylene diisocyanate (2,6-toluene diisocyanate).

2) The term “isophorone diisocyanate” is used here and in the following text for 2-isocyanatomethyl-3,5,5-trimethylcyclohexylisocyanate. The stereoisomers are identified at the appropriate points in the text by (I) and (II).

3) The term “diphenylmethane diisocyanate” is used here and in the following text for 4,4-diisocyanatodiphenylmethane, 2,4-diisocyanatodiphenylmethane and 2,2-diisocyanatodiphenylmethane.