



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS K 0312 : 2020

Method for determination of tetra-through
octachlorodibenzo-*p*-dioxins, tetra-through
octachlorodibenzofurans and dioxin-like
polychlorinatedbiphenyls in industrial
water and waste water

ICS 13.060.25;13.060.30

Reference number : JIS K 0312 : 2020 (E)

Date of Establishment: 1999-09-20

Date of Revision: 2020-03-23

Date of Public Notice in Official Gazette: 2020-03-23

Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area
Technical Committee on Chemical Products and
Analytical Methods

JIS K 0312:2020, First English edition published in 2021-07

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

© JSA 2021

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

KK/AT

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	2
3 Terms, definitions and abbreviations	3
3.1 Terms and definitions	3
3.2 Abbreviations	5
4 Outline of determination method	5
5 Sample	6
5.1 Selection of sampling time and sampling point	6
5.2 Sampling	7
5.3 Record of sampling	8
5.4 Handling of samples	8
6 Pretreatment of the sample	8
6.1 Outline of the pretreatment of the sample	8
6.2 Reagents and materials	10
6.3 Instrument and apparatus	14
6.4 Pretreatment operations	15
7 Identification and determination	24
7.1 Outline	24
7.2 Reagents and apparatus	24
7.3 Measurement operations	27
7.4 Identification and determination of dioxins	32
7.5 Limit of detection and minimum limit of determination	35
7.6 Confirmation of the recovery	37
8 Report of the results	38
8.1 Methods of expression for analytical results	38
8.2 Unit of concentration	39
8.3 Conversion to toxic equivalents	39
8.4 Handling of numerical values	40
9 Quality control of the measured data	40
9.1 General	40
9.2 Assurance of reliability of measured data	40
9.3 Requirements for measurement operations	42
9.4 Record of measurement operations	45
9.5 Report on the precision control	46

Annex JA (normative)	Sampling by a large volume collecting apparatus	47
Annex JB (informative)	Example of use of internal standard	49
Annex JC (informative)	Examples of measurement conditions of GC-MS and chromatogram	55
Annex JD (informative)	Conversion to TEQ	68
Annex JE (informative)	Comparison table between JIS and corresponding International Standards	74

Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Act. This edition replaces the previous edition (**JIS K 0312**:2008), which has been technically revised.

This **JIS** document is protected by the Copyright Act.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, published patent application or utility model rights.

Blank

Method for determination of tetra-through octachlorodibenzo-*p*-dioxins, tetra-through octachlorodibenzofurans and dioxin-like polychlorinated biphenyls in industrial water and waste water

Introduction

This Japanese Industrial Standard was established in 1999 as “Method for determination of tetra-through octachlorodibenzo-*p*-dioxins, tetra-through octachlorodibenzofurans and coplanar polychlorobiphenyls in industrial water and waste water”, and has gone through three revisions including this one. This Standard has been prepared based on **ISO 18073**:2004, Edition 1, and **ISO 17858**:2007, Edition 1, with some modifications of the technical contents.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standards. A list of modifications with the explanations is given in Annex JE. Annex JA to Annex JD are unique to **JIS** and not given in the corresponding International Standards.

1 Scope

This Standard specifies a method for the determination of tetra-through octachlorodibenzo-*p*-dioxins, tetra-through octachlorodibenzofurans and dioxin-like PCBs in industrial water and waste water using a gas chromatograph/mass spectrometer (hereafter referred to as GC-MS). The GC-MS employed in this Standard shall be the double-focusing mass spectrometer (hereafter referred to as MS) where the capillary column of a gas chromatograph (hereafter referred to as GC) is used and its resolution is 10 000 or more.

NOTE The International Standards corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 18073:2004 *Water quality—Determination of tetra- to octa-chlorinated dioxins and furans—Method using isotope dilution HRGC/HRMS*

ISO 17858:2007 *Water quality—Determination of dioxin-like polychlorinated biphenyls—Method using gas chromatography/mass spectrometry* (overall evaluation: MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

WARNING Since dioxins are very toxic, inhalation, accidental ingestion, direct contact to skin, etc. shall be avoided as much as possible, and ventilation of pretreatment room and analysis room and control of waste liquid and waste shall be sufficiently carried out. Since the health of the measurer may be damaged by inhalation or accidental ingestion