



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS K 2541-2 : 2003
(PAJ)

**Crude oil and petroleum products—
Determination of sulfur content
Part 2 : Oxidative microcoulometry**

ICS 75.080

Reference number : JIS K 2541-2 : 2003 (E)

PROTECTED BY COPYRIGHT

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from Petroleum Association of Japan (PAJ), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law. Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS K 2541 consists of the following 7 parts with the general title *Crude oil and petroleum products—Determination of sulfur content*.

Part 1 : Wickbold combustion method

Part 2 : Oxidative microcoulometry

Part 3 : Quartz-tube combustion method (Air method)

Part 4 : Energy-dispersive X-ray fluorescence method

Part 5 : General bomb method

Part 6 : Ultraviolet fluorescence method

Part 7 : Wavelength-dispersive X-ray fluorescence method

Date of Establishment: 2003-07-20

Date of Public Notice in Official Gazette: 2003-07-22

Investigated by: Japanese Industrial Standards Committee

Standards Board

Technical Committee on Chemical Products

JIS K 2541-2:2003, First English edition published in 2003-12

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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

© JSA 2003

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

PROTECTED BY COPYRIGHT

Contents

		Page
1	Scope	1
2	Normative references	2
3	Principle of test	3
4	Reagents	3
5	Test apparatus	4
6	Preparation of test apparatus	6
7	Check of test apparatus and preparation of working curve	7
8	Sampling method and sample preparation method	10
9	Measurement of sample	10
10	Calculation	10
11	Expression of result	11
12	Precision	11
13	Report of test result	11

Crude oil and petroleum products— Determination of sulfur content Part 2 : Oxidative microcoulometry

1 Scope This Japanese Industrial Standard specifies the method of quantitative determination of the sulfur content of 1 mass ppm to 1 000 mass ppm in gasoline, kerosene and light oil by oxidative microcoulometry.

- Remarks
- 1 Although the sample containing nitrogen of not less than 0.1 mass % or chlorine of not less than 1.0 mass % will interfere with this analytical method, the interference can be removed by adding sodium azide into the electrolytic solution in a titration cell. However, this does not apply to the sample containing approximately 500 mass ppm of bromine or organic metallic compound.
 - 2 The sample containing sulfur content of not less than 200 mass ppm can be measured by diluting to about 50 mass ppm using isooctane, toluene, etc.
 - 3 Although dangerous reagents, operation and test apparatus are sometimes used in this Standard, this Standard does not purport to address all the safety precautions. Therefore, the user of this test method shall establish cautionary measures for safety and health prior to the test.

- Information
- 1 This test method has been prepared by referring to **ISO/DIS 16591** *Petroleum products—Determination of sulfur content—Oxidative microcoulometry method*.
 - 2 The group of standards including this Standard specify the test methods shown in Informative Table 1.

Informative Table 1 Classification of test method

Group of standard	Classification of test method	Kind of oil to be applied (example)	Range of measurement
K 2541-1	Wickbold combustion method	Automobile gasoline, kerosene, light oil	1 mass ppm to 10 000 mass ppm
K 2541-2	Oxidative microcoulometry	Automobile gasoline, kerosene, light oil	1 mass ppm to 1 000 mass ppm
K 2541-3	Quartz-tube combustion method (Air method)	Crude oil, light oil, heavy oil	0.01 mass % min.
	Annex (informative) Quartz-tube combustion method (Oxygen method)		
K 2541-4	Energy-dispersive X-ray fluorescence method	Crude oil, light oil, heavy oil	0.01 mass % to 5 mass %
K 2541-5	General bomb method	Crude oil, heavy oil, lubricating oil	0.1 mass % min.
	Annex (normative) Inductively coupled plasma atomic emission spectrochemical analysis	Lubricating oil	0.05 mass % min.
K 2541-6	Ultraviolet fluorescence method	Automobile gasoline, kerosene, light oil	3 mass ppm to 500 mass ppm
K 2541-7	Wavelength-dispersive X-ray fluorescence method	Automobile gasoline, kerosene, light oil	5 mass ppm to 500 mass ppm

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS K 0557 *Water used for industrial water and wastewater analysis*

JIS K 1101 *Oxygen*

JIS K 2249 *Crude petroleum and petroleum products—Determination of density and petroleum measurement tables based on a reference temperature (15 °C)*

JIS K 2251 *Crude petroleum and petroleum products—Sampling*

JIS K 8355 *Acetic acid*

JIS K 8680 *Toluene*

JIS K 8913 *Potassium iodide*

JIS K 9501 *Sodium azide*

JIS K 9703 *2,2,4-Trimethylpentane*

JIS Q 0034 *General requirements for the competence of reference material producer*

JIS Q 0035 *Certification of reference materials—General and statistical principles*

JIS Z 8401 *Guide to the rounding of numbers*