

JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS D 1030 : 1998

**Automobiles — Analytical procedure
for measurement of carbon monoxide,
carbon dioxide, total hydrocarbons
and oxides of nitrogen in exhaust gas**

ICS 13.040.50; 71.040.40

Descriptors : road vehicles, private cars, exhaust gases, carbon monoxide, carbon dioxide, organic chemistry, determination of content, measurement, prime movers, aliphatic hydrocarbons, aromatic hydrocarbons, nitrogen oxides

Reference number : JIS D 1030 : 1998 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently JIS D 1030:1995 is replaced with JIS D 1030:1998.

In this revision, the measurement of hydrocarbons has been modified from non-dispersive infrared gas analyzer to hydrogen flame ionization detector which is effective for total hydrocarbons, and measurement for nitrogen oxide has been supplemented.

Date of Establishment: 1967-02-01

Date of Revision: 1998-03-20

Date of Public Notice in Official Gazette: 1998-03-20

Investigated by: Japanese Industrial Standards Committee
Divisional Council on Environment

JIS D 1030:1998, First English edition published in 1998-10

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,
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Printed in Japan

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Automobiles – Analytical procedure for measurement of carbon monoxide, carbon dioxide, total hydrocarbons and oxides of nitrogen in exhaust gas

1 Scope This Japanese Industrial Standard specifies, by means of using a non-dispersive infrared analyzer, hydrogen-flame ionization detector-type analyzer, or chemiluminescence analyzer, the analytical procedures for measurement of carbon monoxide, carbon dioxide, total hydrocarbons and oxides of nitrogen in exhaust gas, which are exhausted from such as gasoline automobile, diesel automobile, liquefied-petroleum-gas (LPG) automobile, or the engine mounted on those automobiles, owing to either method as the direct measuring method by which sampling is directly carried at an exhaust pipe or the dilution measuring method which is carried after diluting exhaust gas with air.

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 indicated below shall be applied.

JIS D 0101 *Glossary of terms relating to kinds of automobiles*

JIS D 0108 *Glossary of terms relating to control of air pollutions from automobile emissions*

JIS K 0055 *General rules for calibration method of gas analyzer*

JIS K 0211 *Technical terms for analytical chemistry (general part)*

JIS K 2240 *Liquefied petroleum gases*

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

3 Definitions For the purpose of this Standard, the definitions given in **JIS D 0101**, **JIS D 0108**, **JIS K 0211**, and the following definitions apply.

- a) **direct measuring method** The method by which exhaust gas is directly and continuously sampled from an exhaust duct using direct sampling apparatus and then the concentration and exhausted volume of target component in exhaust gas are measured.
- b) **dilution measuring method** The method by which exhaust gas is sampled after being diluted with air using constant volume-type sampling apparatus and then the concentration and exhausted volume of target component in diluted exhaust gas is measured.
- c) **diluted exhaust gas** The exhaust gas diluted with cleaned air using constant volume-type sampling apparatus.
- d) **total hydrocarbons** Organic compounds which are not-yet-burned fuels or already burned products contained in exhaust gas, and which can make response with a hydrogen-flame ionization-type analyzer. THC is its abbreviation.
- e) **concentration** Concentration is the volumetric ratio of carbon monoxide (CO), carbon dioxide (CO₂), total hydrocarbons (THC), and nitrogen oxide (NO_x) which are being contained in exhaust gas or diluted exhaust gas. The two type of concentrations measured