

JASO

Technical Paper

Investigation of Method for measuring
ammonia in exhaust gas
from gasoline/diesel engine

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Japanese Automobile Standards Organization
Society of Automotive Engineers of Japan, Inc.

1. Method for measuring ammonia in exhaust gas from automotive engine

1) Introduction

Although the measurement manual is stipulated in JIS K0099 regarding the method for measuring ammonias, substantially no standard has been established for a method for measuring ammonias in exhaust gas from gasoline and diesel engines. On the other hand, measurements of ammonias have been performed in various places and it is important to study problems in measurement in order to ensure reliability of measurement values. Among various methods that are implemented for measuring ammonias, liquid sampling is commonly and widely employed for automotive exhaust gas. This technical paper describes the result of the study on the ion chromatograph (hereinafter referred to as the IC method).

This document summarizes the problems (notes) of the methods for measuring ammonias based on “Method for measuring ammonias in exhaust gas from gasoline and diesel engines” which was created by Subcommittee for Non-regulated Substance, Committee for Exhaust Gas and Fuel Economy, Japan Automobile Manufacturers Association, Inc., based on the findings at Japan Automobile Research Institute. Note that the devices and analysis conditions described herein are merely an example, and the conditions that are appropriate for the individual devices need be set.

2) Purpose

To clarify the problems (notes) of and to standardize the method for measuring ammonias in exhaust gas from automotive engine and diesel engines using the IC method.

3) Components to be studied

- The component to be studied is 1 component, ammonia.

2. Problems in the result of study on the method for measuring ammonias

The following problems have been identified for the method for measuring ammonias from automotive exhaust gas. At measurement, it is necessary to understand the impact of these problems and take countermeasures.

- Problem of ammonias generated from the devices
- Problem of sensitivity of analysis
- Problem of interference components

3. Precautions in measurement

1) Sampling method

Perform liquid sampling of diluted exhaust gas.

Dissolve the commercially available boric acid of 5.0 g in water and prepare total of 1 L for suction liquid. Use 30 ml of the prepared 0.5 % boric acid solution as suction liquid to absorb and collect at a constant flow of 1 L/min.