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Japan

Sanitary/Phytosanitary/Food Safety

Japan Approves a food additive, nitrous oxide

2004

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Report Highlights:

Japan announced its intent to designate nitrous oxide as an authorized food additive and has invited foreign embassies to comment on the revision until January 11, 2005. This proposal will also be notified to the WTO.

Includes PSD Changes: No
Includes Trade Matrix: No
Unscheduled Report
Tokyo [JA1]
[JA]

On December 21, 2004 the Ministry of Health, Labor and Welfare (MHLW) invited foreign embassies in Tokyo to comment on the designation of nitrous oxide as an authorized food additive for whip cream (which is a product obtained by whipping milk fat or vegetable fat) purpose only. Nitrous oxide is permitted when it is filled in a hermetic pressure-resistant metal container other than cartridge-type containers, premixed with whip cream. Foreign governments have until January 11, 2005 to comment.

MHLW will open the proposal for comments from a wider audience and notify the WTO SPS Committee before final review and adoption.

All interested parties are encouraged to send their comments to the USDA Foreign Agricultural Service well before the deadline. The office responsible for the comments is:

Food Safety and Technical Services
International Trade Policy division
USDA Foreign Agricultural Service
Fax: 202-690-0677
Email: fstd@fas.usda.gov

The proposed standards and specifications of the flavoring are as follows:

Nitrous Oxide

1. Use standard

Nitrous Oxide is permitted for use only for whip cream (which is a product obtained by whipping milk fat and vegetable fat).

2. Compositional specifications

N₂O

Mol. Wt. 44.01

Nitrous oxide [10024-97-2]

Definition Nitrous Oxide is a gas consisting of nitrous oxide (N₂O). It is filled in a hermetic, pressure-resistant metal container other than cartridge-type containers.

Content Nitrous Oxide contains not less than 97.0% (vol) of nitrous oxide (N₂O).

Description Nitrous Oxide is a colorless gas at room temperature under atmospheric pressure. It has no odor.

Identification (1) A wood-chip ember bursts into flame when exposed to Nitrous Oxide.

(2) Perform Gas Chromatography on 1 ml each of Nitrous Oxide (the sample) and nitrous oxide (N₂O) under the operating conditions specified for Assay. The retention time of the main peak of the sample coincides with that of nitrous oxide (NO₂).

Purity The amounts of Nitrous Oxide given in Purity are the volumes at 20°C and at an atmospheric pressure of 101.3 kPa. Collect appropriate volumes of the sample by converting in terms of the temperature and pressure at the time of testing.

(1) **Chloride** To 2.5 ml of 0.1 mol/L silver nitrate TS, add water to make 50 ml. When 10 L of Nitrous Oxide is passed through this solution and allowed to stand for 5 minutes, a white turbidity is produced. The turbidity is not darker than that of the solution obtained by the following procedure: To 2.5 ml of 0.1 mol/L silver nitrate TS, add 1 ml of Chloride Ion Standard Stock Solution, 0.15 ml of diluted nitric acid, and water to make 50 ml, and allow to stand for 5 minutes.

(2) **Arsenic hydride and hydrogen phosphide** Take 5 ml of silver diethyldithiocarbamate–quinoline TS in a Nessler tube. Into the Nessler tube, insert a gas introducing tube connected to a glass tube filled with lead acetate TS-soaked absorbent cotton. Keep the end of the gas introducing tube 2 mm above the bottom of the Nessler tube. Introduce 10.0 L of Nitrous Oxide into the Nessler tube in 10 minutes. The color of the silver diethyldithiocarbamate–quinoline TS does not change.

(3) Carbon monoxide Introduce 5.0 ml of Nitrous Oxide into a gas-measuring tube or syringe for gas chromatography, perform Gas Chromatography on the collected gas under the operating conditions given below. No peak is observed at the retention time of carbon monoxide.

Operating conditions

Detector: Thermal conductivity detector.

When 5 ml of hydrogen or helium containing 0.1% (vol) carbon monoxide is charged, the peak height obtained is about 10 cm or more.

Column packing material: 300–500 μ m zeolite for gas chromatography.

Column tube: A glass tube about 3 mm in internal diameter and about 3 m in length.

Column temperature: A constant temperature at about 50°C.

Carrier gas and flow rate: Use hydrogen or helium. Adjust the flow rate so that the peak of carbon monoxide appears about 20 minutes after charge.

(4) Nitrogen monoxide and nitrogen dioxide Not more than 2 μ l/L as total volume. Use a detector tube for nitrogen oxide determination.

Assay The collection of Nitrous Oxide should follow the requirement given in Purity.

Introduce 1.0 ml of Nitrous Oxide into a gas-measuring tube or a syringe for gas chromatography, perform Gas Chromatography on the collected gas under the operating conditions given below, and measure the peak area (A_T) of air. Separately, introduce 3.0 ml of nitrogen into a gas mixer, add the carrier gas to make exactly 100 ml. Mix them well, and use this as the standard mixed gas. With 1.0 ml of the mixed gas, proceed in the same manner as for Nitrous Oxide, and measure the peak area (A_S) of nitrogen.

$$\text{Content of nitrous oxide (N}_2\text{O)} = 100 - 3 \times \frac{A_T}{A_S} \% (\text{vol})$$

Operating conditions

Detector: Thermal conductivity detector.

Column packing material: 300–500 μ m zeolite for gas chromatography.

Column tube: A glass tube about 3 mm in internal diameter and about 3 m in length.

Column temperature: A constant temperature at about 50°C.

Carrier gas and flow rate: Use hydrogen or helium. Adjust the flow rate so that the peak of nitrogen appears about 2 minutes after charge.

Reagents

Nitrous Oxide N_2O A colorless gas, having no odor. Use nitrous oxide contained in a hermetic, pressure-resistant metal container.

Carbon monoxide CO A colorless gas. It is produced by passing the gas that is generated by applying sulfuric acid to formic acid through sodium hydroxide TS. Carbon monoxide contained in a hermetic, pressure-resistant metal container may be used.

Quinoline [K 8279]

Nitrogen N_2 [K 1107]

Silver diethyldithiocarbamate–quinoline TS Dissolve 50 mg of silver nitrate, ground into a fine powder, in 100 ml of quinoline, and add 0.2 g of silver diethyldithiocarbamate. Prepare fresh before use.

Detector tube for nitrogen oxide determination

A detector tube for nitrogen oxide determination is used by connecting to a detector tube type gas-measuring device. Use a detector tube type gas-measuring device that meets the Japan Industrial Standards.

Procedure Using a detector tube type gas-measuring device, pass Nitrous Oxide through a detector tube for nitrogen oxide determination up to the volume specified for the detector tube, and measure the total volume of nitrogen monoxide and nitrogen dioxide.