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SB/T 10447-2007

**Fruits and vegetables. Principles and techniques of the
controlled atmosphere method of storage
(English Translation)**

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Foreword

This standard is equivalent to the International Organization for Standardization (ISO) standard ISO 6949:1988 "Food and Vegetable Atmosphere Storage Principles and Techniques" (English version), its technical content and text structure are consistent with ISO 6949:1988.

Compared with ISO 6949, this standard mainly has the following editorial changes.

- Delete the preface to the ISO standard;
- Replace "this International Standard" with "this standard";
- Delete the word "Note" in 5.2.3 and include the contents in the provisions of 5.2.3;
- Delete the informative Appendix A;
- The punctuation has been modified.

This standard was proposed by the China Business Federation.

This standard is managed by the Ministry of Commerce of the People's Republic of China.

This standard was drafted. China Vegetable Distribution Association, School of Environment, Renmin University of China.

Introduction

Extend the shelf life of fruits and vegetables and reduce the rate of loss and the rate of metabolism of the product itself, the rate of pathogenic microorganisms and diseases closely related. Using a refrigerated method and controlling the relative humidity of the air reduces the rate of respiration and transpiration while reducing some of the disease the occurrence of harm. The use of modified atmosphere storage for fruits and vegetables will

give better results. Atmospheric storage is to maintain temperature and humidity at an optimal value, adjust the gas composition in the reservoir. The modified atmosphere storage method is the three major factors of temperature, humidity and gas composition.

Combined with integrated control, the product's metabolic vitality is greatly reduced. For climacteric fruits and vegetables (such as apples, pears, bananas and bananas) Eggplant) will also delay the arrival of the peak of breathing.

The environment of low oxygen and high carbon dioxide will reduce the effect of ethylene, thus delaying the product's ripening and maintaining the nutritional value of the product.

Good appearance and extended shelf life. In addition, the reduction in oxygen content and the increase in carbon dioxide content also inhibit pathogenic microorganisms and delay or prevent the occurrence of physiological diseases.

SB/T 10447-2007/ISO 6949:1988 Atmospheric storage principles and techniques for fruits and vegetables

1 Scope

This standard specifies the principles and techniques for the controlled storage of fruits and vegetables.

This standard applies to a variety of fruits and vegetables (especially apples, pears and bananas). When the atmosphere storage is applied to each product, in addition to the warranty with the best temperature and relative humidity, the oxygen content is also lower than 21% (volume fraction) of the normal level, and the partial pressure of the gas is also reduced.

The content of oxygen in the atmosphere storage should not be lower than 1.5% (volume fraction), because in the state of hypoxia, fruits and vegetables will be anaerobic Suction, produce fermentation, and the surface of the fruit will brown.

An increase in carbon dioxide content will result in an excessively high carbon dioxide content of 8% to 10% (volume fraction), causing various physiological diseases (oxidation).

Carbon damage), resulting in a decrease in product quality and a reduction in weight.

2 Types of modified atmosphere storage

In actual operation, controlled atmosphere storage can be divided into the following two categories.

2.1 First class

The oxygen content in the gas composition is slightly reduced by 18% to 11% (volume fraction), and the carbon dioxide content is correspondingly increased by 3%.

10% (volume fraction), the sum of the contents of oxygen and carbon dioxide is 21%.

For example. 8% (volume fraction) CO₂; 13% (volume fraction) O₂; 79% (volume fraction) N₂.

This modified atmosphere storage method is called changing gas storage (also called spontaneous gas modulation), which is to increase carbon dioxide by the product's own breathing.

The content is therefore not the preferred method. To reduce the carbon dioxide content can only be achieved by ventilation with the outside world, while oxygen the content will also increase.

Apples can be stored using this modified atmosphere storage method. This type of modified atmosphere storage method is also suitable for short-term storage of tropical fruits such as bananas.

2.2 Second class

In the gas composition.

---Oxygen content is 2% to 4% (volume fraction) [average 3% (volume fraction)], carbon dioxide content is 3% to 5% (body Number of points); or

--- The oxygen content is significantly reduced to 1% to 2% (volume fraction), and the carbon dioxide content is 1% to 2% (volume fraction).

In the above gas composition, the sum of the contents of oxygen and carbon dioxide should be less than 21% (volume fraction).

For example. 3% (volume fraction) CO₂; 3% (volume fraction) O₂; 94% (volume fraction) N₂.

This type of modified atmosphere storage requires special equipment.

This type of modified atmosphere storage method is the most commonly used. In general, the composition of the gas needs to be adjusted and changed according to the type of product.

The factors that should be considered when considering gases are.

--- The sensitivity of the product to carbon dioxide when oxygen is sufficient or oxygen is low;

--- maturity;

---Storage time.

3 Gas adjustment method

A sealed storage room equipped with special equipment can obtain the composition of the gas components required for controlled atmosphere storage, and specially designed storage containers.

It is also possible to achieve a specified composition of oxygen and carbon dioxide.

Silicone windows made of silicone rubber film can be glued into storage bags or storage rooms.

The amount of oxygen and carbon dioxide required for modified atmosphere storage products can be installed and made through specially assembled storage rooms and appropriate equipment SB/T 10447-2007/ISO 6949:1988