

ICS 65.020.01

CCS B 20



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 37491-2019

Guideline for low oxygen control of stored grain insects

低氧防治储粮害虫一般规则

Issued on: June 4, 2019

Implemented on: January 1, 2020

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard was proposed by the National Grain and Material Reserve Bureau. This standard is under the jurisdiction of the National Cereals and Oils Standardization Technical Committee (SAC/TC270). Drafting organizations of this standard. China Grain Reserve Management Corporation, China Grain Reserve Chengdu Institute Co., Ltd., National Grain Administration Standard Quality The center, the National Grain Administration Institute of Science, Henan University of Technology, and the Central Reserve Grain Meihekou Depot directly. The main drafters of this standard. Bu Chunhai, Gao Sufen, Wang Zhengyou, Li Keqiang, Yang Jian, Yan Xiaoping, Zhou Hao, Fu Pengcheng, Li Haojie, Zhao Huiyi, Shi Tianyu, Wang Dianxuan, Bai Chunqi, Xu Shengwei, Li Zhimin. General rules for preventing and controlling stored grain pests with hypoxia

1 Scope

China's national guideline for controlling stored grain insects by low oxygen atmospheres. It specifies the terms and definitions, the principles, the basic requirements, and the time and concentration requirements. The method kills insects by removing the oxygen they need rather than by poisoning them: the silo is sealed and its atmosphere is displaced with nitrogen or enriched with carbon dioxide until oxygen falls to a level insects cannot survive, and it is held there long enough to kill every stage including the eggs. The reason to do it this way is that the alternative is fumigation with phosphine, and phosphine has two problems that are getting worse - resistant insect populations have emerged wherever it has been used heavily, and residue and worker safety regulations are tightening. Low oxygen leaves no residue, cannot be resisted, and does not harm the grain. What it demands is a genuinely gastight structure and patience, since the exposure is measured in weeks rather than days.

This standard specifies the terms and definitions, principles, basic requirements, time and

concentration requirements for hypoxia prevention and control of stored grain pests, and safety requirements. Requirement and evaluation of control effect. This standard applies to granaries or grain piles in a closed state. The types of grains include rice, corn, wheat and soybeans.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article. For undated references, the latest version (including all amendments) applies to this document.

GB 2894 Safety signs and guidelines for their use

GB 8958 Safety Regulations for Hypoxic Dangerous Work

GB 12358 General technical requirements for ambient gas detection and alarm devices in workplaces

GB/T 16556 Self-contained open-circuit compressed air breathing apparatus

GB/T 25229 Air tightness requirements for grain storage warehouses

GB/T 29890 Technical Specifications for Grain and Oil Storage LS/T 1201 Phosphine circulation fumigation technical specification

JB/T 6427 Pressure swing adsorption oxygen and nitrogen production equipment

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Low oxygen control grain storage insects lowoxygencontrolgrainstorageinsect The process of maintaining the oxygen concentration of 2% to 5% in the granary or grain pile to prevent and control stored grain pests.

3.2 Hypoxia insecticide lowoxygenkilgrainstorageinsect The process of maintaining the oxygen concentration in the granary or grain pile below 2% to kill the stored grain pests.

4 Principle

The oxygen concentration in the grain pile is reduced to a certain level by filling carbon dioxide or nitrogen into the grain bin or grain pile with good airtightness. And maintain the corresponding time to inhibit the respiration of stored-grain pests so that they die or cannot reproduce, so as to achieve the purpose of preventing and controlling stored-grain pests.

5.1 Air tightness requirements

5.1.1 The air tightness of the warehouse for the air conditioning of the single-storey

warehouse shall meet the requirements of GB/T 25229. The air tightness under the membrane increased from -300Pa to

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