

The NHH logo is a red rectangle with the letters 'NHH' in white, bold, sans-serif font.

**NHH**

The background of the entire page is a blue-toned image featuring a large pile of small, white, spherical oxygen scavenger tablets. The pile is situated on a surface that appears to be a glowing blue circuit board or a digital grid. In the upper right corner, there is a red rectangular logo with the white letters 'NHH'. A large, white, semi-circular shape is positioned in the lower half of the image, containing the product name and tagline.

# O2ZERO<sup>®</sup> ACTIVE OXYGEN SCAVENGER

Double Barrier · Freshness Lock Expert

## Core Value

### Double Barrier Technology: Redefining PET Freshness Preservation

Our PET active oxygen-scavenging masterbatch utilizes advanced active + passive dual-barrier technology, forming an efficient oxygen barrier system within the PET container walls. It not only actively removes residual oxygen inside the bottle but also passively blocks external oxygen permeation, providing comprehensive protection for oxygen-sensitive products from the inside out.

- **Active Scavenging**

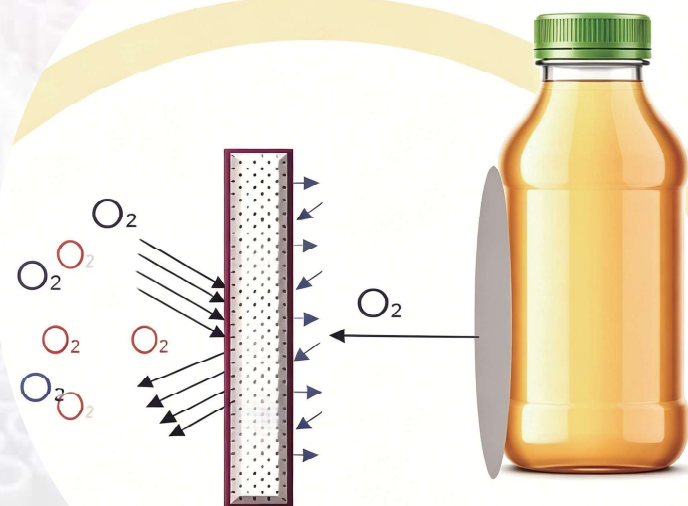
This technology first involves the uniform dispersion of active oxygen-scavenging masterbatch during the bottle manufacturing process. After the package is filled, the active ingredients within the masterbatch rapidly undergo irreversible chemical reactions with the residual oxygen in the headspace, efficiently converting it into stable compounds. This creates an initial low-oxygen or even oxygen-free environment immediately after filling, inhibiting oxidative spoilage from the source.

- **Passive Barrier**

After the initial active scavenging is complete, special barrier materials dispersed within the PET matrix form a dense and stable physical barrier inside the container wall. This barrier effectively slows down and blocks oxygen molecules from the external environment penetrating through the bottle wall, acting like a durable protective suit for the product, continuously countering oxidation threats during storage and distribution.

- **Synergistic Effect**

Active scavenging and passive barrier do not simply stack; instead, they form a complementary protection process with seamless transition. The active technology quickly establishes an initial advantage, while the passive technology provides long-term assurance. Working together, they achieve dynamic, full-process protection from the moment the package is sealed through the entire shelf life. The preservation effect and duration far exceed traditional solutions that rely on a single technology.



# Core Advantages

NHH

## Easy Processing

Moisture-proof sealed packaging, no pre-drying required; compatible with standard injection/blow molding equipment.

01

## High Transparency

Does not affect bottle clarity; can be used together with other colorants.

02

## Technical Support

Full-process support from testing and analysis through production.

06

05

## Regulatory Compliance

Meets FDA, EU, China GB and other food contact material regulations.

04

## Recyclability

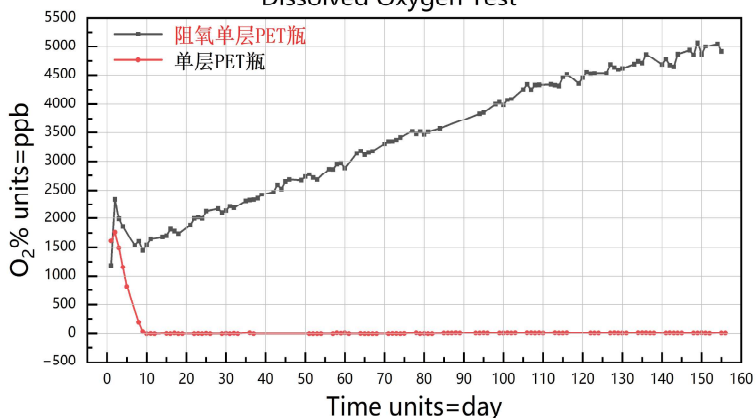
Compatible with rPET, supporting a low-carbon circular economy.

03

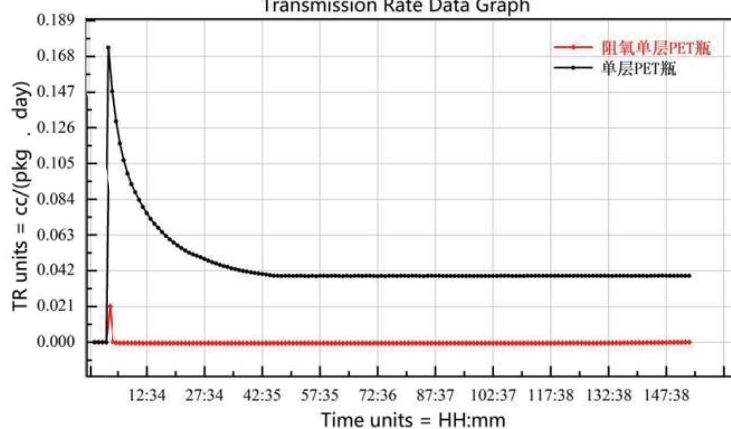
## Flexible Formulation

Customizable formulations based on product type, bottle design, and shelf life requirements.

Dissolved Oxygen Test



Transmission Rate Data Graph



# Application Areas & Benefits Superior Protection for Oxygen-Sensitive Products

**NHH**

- **Extend Shelf Life:**

Significantly reduce the oxidation rate of products, effectively extending the shelf life of food, beverages, and other goods.

This technology actively scavenges initial residual oxygen inside the package and continuously blocks external oxygen penetration. By suppressing oxidation reactions from both the source and the process, it significantly slows down the rate of product deterioration. This wins a longer safe shelf life for food and beverage products, directly helping brands and retailers reduce losses and optimize inventory management.



- **Maintain Quality and Flavor:**

Prevent discoloration, off-flavors, and nutrient loss caused by oxidation, locking in the product's original flavor and color.

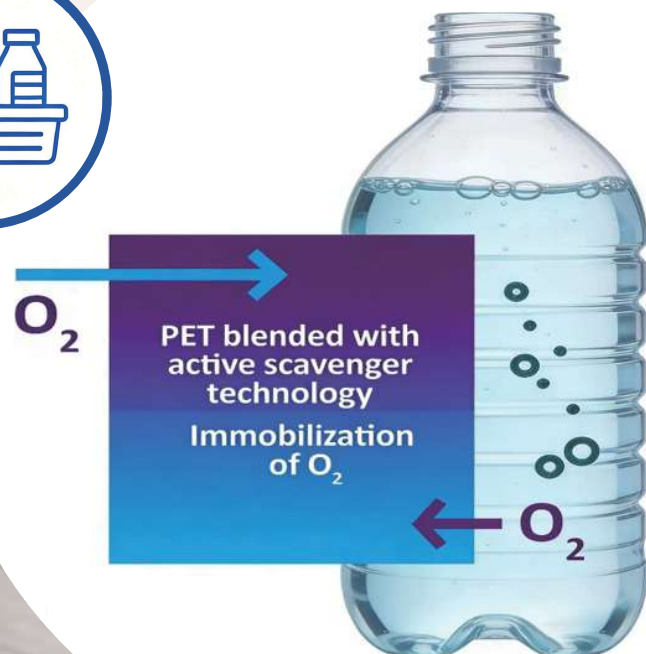
The active oxygen-scavenging components can precisely capture and neutralize oxygen molecules that cause quality degradation. This effectively prevents juice browning, oil rancidity, flavor volatilization, and the oxidative degradation of vitamins and other nutrients. It ensures that products maintain their appealing original color, pure flavor, and core nutritional value from the factory to the consumer.



- **Wide Range of Applications:**

Suitable for PET packaging of various oxygen-sensitive products, such as juices, sauces, health supplements, and pet food.

With its highly efficient oxygen barrier performance, this masterbatch solution can be widely applied to PET packaging fields where the contents are extremely sensitive to oxygen, such as juices, tea drinks, tomato sauce, health supplement softgels, and pet dry food. It provides customized freshness protection for diversified products, enhancing packaging added value.



# Company Strength & Service Support From Formulation to Mass Production – We Support You Every Step

**NHH**

We offer not only high-performance oxygen-scavenging masterbatches but also complete technical services, including:

- Laboratory analysis and formulation optimization
- On-site machine trials and process adjustments
- Regulatory compliance documentation support
- Shelf-life simulation testing and recommendations

We help our customers achieve recyclable, low-carbon, and efficient packaging goals while ensuring product freshness.

01



## GC-MS

- Accurately captures trace residues and volatile odors, Building a solid purity barrier for products at the molecular level

02



## Mocon Oxtran

- New high end machine for product development and quality control
- Measuring oxygen permeability

03



## Microscope

- New machine for particle analysis
- For R&D and production control

04



## Aquatrac-V

- KF Moisture Titrator moisture Used for precise analysis of trace moisture (ppm level) in liquid, solid, and gas samples





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