

ona

odor neutralizing agent

The Science of ONA

The ONA odor neutralizing products consist of complex formulations representing a variety of chemical compounds offering different functionalities, both structural and chemical.

The technology behind ONA was initiated over 25 years ago. The scientist (who was eventually credited with the invention of ONA) became fascinated when he observed that when terpenes were diffused into the environment, emissions and odors were reduced.

Inspired by this finding, further evidence showed that the odors were not just masked but permanently removed. The result was a set of specialized formulations that neutralize a wide spectrum of organic and inorganic odor problems — effectively, efficiently and permanently.

ONA formulations have been scientifically engineered to be environmentally safe. Manufactured under strict quality controls, the components of ONA are generally recognized as common in the food industry and have a long history of safety.

TERPENES

Terpenes are widespread in nature, mainly in plants as constituents of essential oils. Many terpenes are hydrocarbons, but oxygen-containing compounds such as alcohols, aldehydes or ketones (terpenoids) are also found. Their building block is the hydrocarbon isoprene, $\text{CH}_2=\text{C}(\text{CH}_3)-\text{CH}=\text{CH}_2^*$.

**Isoprene Rule, Wallach 1887.*

TERPENE CHARACTERISTICS

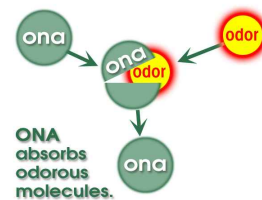
- Terpenes have anti-bacterial, antifungal and anti-septic properties.
- Terpenes have oxygenating properties (increases oxygen level).
- When diffused into the environment, terpenes have been found to reduce airborne chemicals and bacteria.
- Terpene characteristics appear to either destroy the odor molecule or convert it to a more acceptable level.

ONA - THE MECHANISMS OF ACTION

There are three mechanisms of action that can occur, based on the chemical and physical natures of each terpene and active ingredient versus the organic and inorganic volatile compounds.

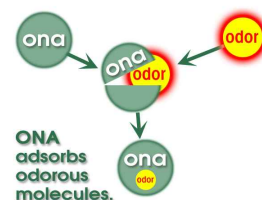
Absorption — the attraction of the different reactive sites on the ONA active ingredient molecules will attract and non-permanently bind with the low molecular, high weight compound (VOC).

Absorb: To retain wholly, without reflection or transmission, what is taken in.

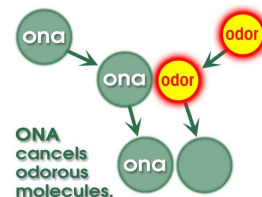


Adsorption — All VOCs and odorous compounds have a solubility factor in ONA active ingredients. This solubility will allow the VOC compound to solubilize itself in the presence of ONA, relative to the chemistry of the emission, temperature, pH, and pressure of the environment.

Adsorb: To collect and hold (gas or vapor) in the surface of a solid.



Chemical Reaction (The Pairs Theory*) — This involves the permanent bonding of the odorous molecule (VOC) and the ONA active ingredients reactive sites. This mechanism transforms the pollutant in its basic properties. As a result, odor disappears.



** The Pairs Theory is based on the work of Zwaardermaker, an early 20th century Dutch scientist. The Zwaardermaker Pairs Theory concludes that two or more odors can cancel each other out when they combine in a natural bond like attraction.*

The affinity of the different odorous compounds (VOCs) with ONA is directly relative to their chemical composition and physical state. For example, a hydrogen sulfite can have a great affinity for certain sites of the ONA active ingredient. It can either bond electrostatically, or react in comparison to its relative solubility. This means different components will be neutralized by one mechanism compared to the other two, or a blend of each of the three.

The bottom line is ONA is not a masking agent but offers a safe, effective way to permanently eliminate odors and emissions.

Make Odor Problems Gone.

Eliminate them permanently with **ona**.



Natural!
Safe!
Organic!
Powerful!

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