

## CATALASE (ENZYMATIC PEROXIDE KILLER)

In textile processing, enzymatic peroxide killers, also known as peroxidase enzymes, are used to neutralize excess hydrogen peroxide remaining on fabrics after bleaching processes. Peroxidases catalyze the decomposition of hydrogen peroxide into water and oxygen, effectively eliminating its bleaching effects and preventing damage to the fabric. Here's how enzymatic peroxide killers work and their benefits:

### 1. Mechanism of Action:

- Peroxidase enzymes catalyze the following reaction:



- This reaction breaks down hydrogen peroxide into water (H<sub>2</sub>O) and oxygen (O<sub>2</sub>), rendering it harmless.
- Peroxidases accelerate this reaction by providing an alternative pathway with lower activation energy, leading to the rapid decomposition of hydrogen peroxide.

### 2. Benefits of Enzymatic Peroxide Killers:

- **Effective Neutralization:** Enzymatic peroxide killers efficiently decompose hydrogen peroxide residues on fabrics, preventing fabric damage or discoloration.
- **Selectivity:** Peroxidase enzymes are specific to hydrogen peroxide and do not affect other chemicals or processes used in textile processing.
- **Environmentally Friendly:** Enzymatic peroxide killers are derived from natural sources and are biodegradable, making them environmentally friendly alternatives to chemical neutralizers.
- **Mild Processing Conditions:** Enzymatic reactions occur under mild conditions, reducing energy consumption and minimizing the environmental impact of textile processing.
- **Compatibility:** Enzymatic peroxide killers are compatible with various textile fibers and dyes, allowing for versatile applications in textile processing.