

# Catalase

**Source: Bovine Liver**  
**Cell Culture Tested**

**Product Code: TC037**

## Product Description :

Molecular Weight: 250 kDa

CAS No.: 9001-05-2

Synonym: H<sub>2</sub>O<sub>2</sub>:H<sub>2</sub>O<sub>2</sub> oxidoreductase

EC No.: 1.11.1.6

Catalase from bovine liver is a homotetrameric enzyme that is primarily located in peroxisomes. This enzyme catalyzes the decomposition of H<sub>2</sub>O<sub>2</sub> to O<sub>2</sub> and H<sub>2</sub>O, and thus provides protection against the toxic effects of the oxygen radical. The mechanism involves ferryl intermediates. Structurally catalase is a tetramer of four polypeptide chains, each over 500 amino acids long. It contains four porphyrin heme (iron) groups that allow the enzyme to react with hydrogen peroxide.

Catalase does not require any activator for exhibiting its catalytic activity. Apart from hydrogen peroxide, it can also oxidize molecules such as alcohols, formic acid and alkyl peroxides.

Catalase is often used as an antioxidant in cell culture media. Uses of catalase are mentioned below:

### 1. As an antioxidant:

Large numbers of reactive oxygen species (ROSs) are generated as unavoidable side products of respiratory metabolism of cultured cells. These ROSs damage inter- and intra-cellular macromolecules, ultimately leading to cell death. Catalases act as a scavenger of ROSs and are involved in many cellular defense mechanisms. Catalases differ from peroxidases in that they have the ability to utilize H<sub>2</sub>O<sub>2</sub> as both an electron acceptor and donor that yields a disproportionate reaction. Due to this catalytic activity, catalases are believed to be involved in the protective destruction of H<sub>2</sub>O<sub>2</sub> that is generated in respiring cells.

### 2. In gene expression studies:

Catalase has been used to study the role of ROSs in gene expression and apoptosis, mainly in cancer researches.

## Directions :

### Preparation instructions:

Catalase is soluble in 50mM potassium phosphate buffer (1mg/ml) pH 7.0. Optimum activity of this enzyme is observed between pH 4.5 to 8.0.

Catalase solutions should not be autoclaved as high temperature denatures the enzyme and leads to loss of enzyme activity. Solutions are sterilized by should by filtering through a sterile membrane filter with porosity of 0.22 microns or less.

## Quality Control:

### Appearance

Brown powder with green cast.

### Protein content by biuret

60.00 - 90.00%

### Enzymatic Activity units/mg protein

2000.00 -5000.00

### Assay

NLT 99%

### Cell Culture Test

Passes

## Storage and Shelf Life:

Store at 2-8°C away from bright light.

When frozen, catalase solutions lose the activity, so they should not be frozen or lyophilized. Direct exposure of solutions to air should be avoided.

Shelf life is 36 months.

Use before expiry date given on the product label.

### Disclaimer :

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