



## Product Information

### Casein Kinase II from rat liver

Product Number **C 3460**  
Storage Temperature  $-20\text{ }^{\circ}\text{C}$

Synonym: CK-2

#### Product Description

Casein Kinase II (CK-2) is a protein serine/threonine kinase that is ubiquitously distributed in eukaryotic cells. It is an important component of signaling pathways that control the growth and division of cells. CK-2 regulates the activity of variety of regulatory nuclear proteins including nuclear oncoproteins, transcription factors, and enzymes involved in other aspects of DNA transcription metabolism.<sup>1,2</sup>

CK-2 is a tetrameric enzyme of 130-150 kDa with  $\alpha_2\beta_2/\alpha\alpha'\beta_2$  structure. The catalytic subunits are  $\alpha$  and/or  $\alpha'$  with molecular weights between 36 and 44 kDa. The  $\beta$ -subunit, which is considered a regulatory subunit, is approximately 25 kDa.<sup>1,2</sup>

CK-2 is a constitutively active enzyme, which phosphorylates *in vitro* preferentially acidic proteins.<sup>1,3</sup> It is stimulated by polyamines<sup>4</sup> and inhibited by negatively charged molecules such as heparin.<sup>5</sup> Heparin is employed as a tool to distinguish between CK-2 and other serine/threonine kinases. *In vitro* CK-2 undergoes rapid autophosphorylation on the  $\beta$ -subunit. In the presence of various polyamines, the  $\alpha$ -subunit is autophosphorylated while the phosphorylation of the  $\beta$ -subunit is inhibited.<sup>6</sup>

The product is supplied as a solution in 50% glycerol containing 40 mM Hepes, pH 7.5, 1 mM EDTA, 1 mM EGTA, 1 mM DTT, and 400 mM NaCl. It has been prepared according to published procedures.<sup>7</sup>

Purity: minimum 90% (SDS-PAGE)

Unit Definition: One unit of Casein Kinase II will transfer 1 nanomole of phosphate from ATP to casein per minute at  $37\text{ }^{\circ}\text{C}$  at pH 7.5.

The activity of Casein Kinase II is measured by *in vitro* phosphorylation of casein in the presence and in the absence of inhibitor (heparin). The assay procedure is available at our web site ([www.sigmaaldrich.com](http://www.sigmaaldrich.com)) or upon request.

#### Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

#### Storage/Stability

The product ships on dry ice and it is recommended to store the product at  $-20\text{ }^{\circ}\text{C}$ . The product as supplied is stable for 2 years when stored properly.

#### References

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3. Kuenzel, E.A. et al., *J. Biol. Chem.*, **262**, 9136 (1987).
4. Ahmed, K. et al., *Biochem. J.*, **232**, 767 (1985).
5. Hathaway, G.M. et al., *J. Biol. Chem.*, **255**, 8038 (1980).
6. Palen, E., and Traugh, J.A., *Biochemistry*, **30**, 5586 (1991).
7. Khilko, S. et al., *Protein Express. and Purif.*, **3**, 355 (1992).

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